COLOR LASER COPIER 1120/1130/1150

SERVICE MANUAL

REVSION 0

Canon

MAR. 1999 FY8-13G3-000

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Printed in Japan
Imprimé au Japon

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Prepared by

OFFICE IMAGING PRODUCTS TECHNICAL SUPPORT DIVISION

CANON INC.

5-1, Hakusan 7-chome, Toride, Ibaraki, 302-8501 Japan

INTRODUCTION

This Service Manual contains basic data and figures on the plain paper CLC1120/1130/1150 needed to service the machine in the field. The copier is designed to enable fully automated copying work, and may be configured with the following options:

1. RDF-E2
2. Stapler Sorter-F1
3. Film Projector-D1
4. Paper Deck-E1

For the RDF-E2, Stapler Sorter-F1, and Film Projector-D1, see their respective Service Manuals for details. This Service Manual covers the copier itself, and consists of the following chapters:

Chapter 1 *General Description* introduces the copier's features and specifications, shows how to operate the printer unit, and explains how copies are made.

Chapter 2 *Basic Operation* provides outlines of the steps used to generate copies.

Chapter 3 *Exposure System* discusses the principles of operation used for the mechanical/electrical operations of the copier's exposure system. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 4 *Image Processing System* discusses the principles of operation used for the mechanical/electrical operations of the copier's image processing system. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 5 *Laser Exposure System* discusses the principles of operation used for the mechanical/electrical operations of the copier's laser exposure system. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 6 *Image Formation System* discusses the principles of how images are formed. It also explains the timing at which the various units involved in image formation are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 7 *Pick-Up/Feeding System* discusses the principles of how the printer unit picks up and moves paper inside it. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 8 *Fixing System* discusses the principles of how the printer unit fuses toner images to paper. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

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Chapter 9 *Externals/Auxiliary Mechanisms* shows the copier's external parts, and explains the principles used for the copier's various control mechanisms in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.

Chapter 10 *Paper Deck* discusses the principles of operation used for the series of operations between pickup and delivery performed by the paper deck. It also explains the timing at which the various units involved are operated, and shows how they may be disassembled/assembled and adjusted.

Chapter 11 *Installation* introduces requirements for the site of installation, and shows how the printer unit may be installed using step-by-step instructions.

Chapter 12 *Maintenance and Servicing* provides tables of periodically replaced parts and consumables/durables and scheduled servicing charts.

Chapter 13 *Troubleshooting* provides tables of maintenance/inspection, standards/ adjustments, and problem identification (image fault/malfunction).

Appendix contains a general timing chart and general circuit diagrams.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.
   In the diagrams, ▭▭▭ represents the path of mechanical drive — where a signal name accompanies the symbol ⟶, the arrow indicates the direction of the electric signal.
   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.
2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High," while '0' is used to indicate "Low." (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.
   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

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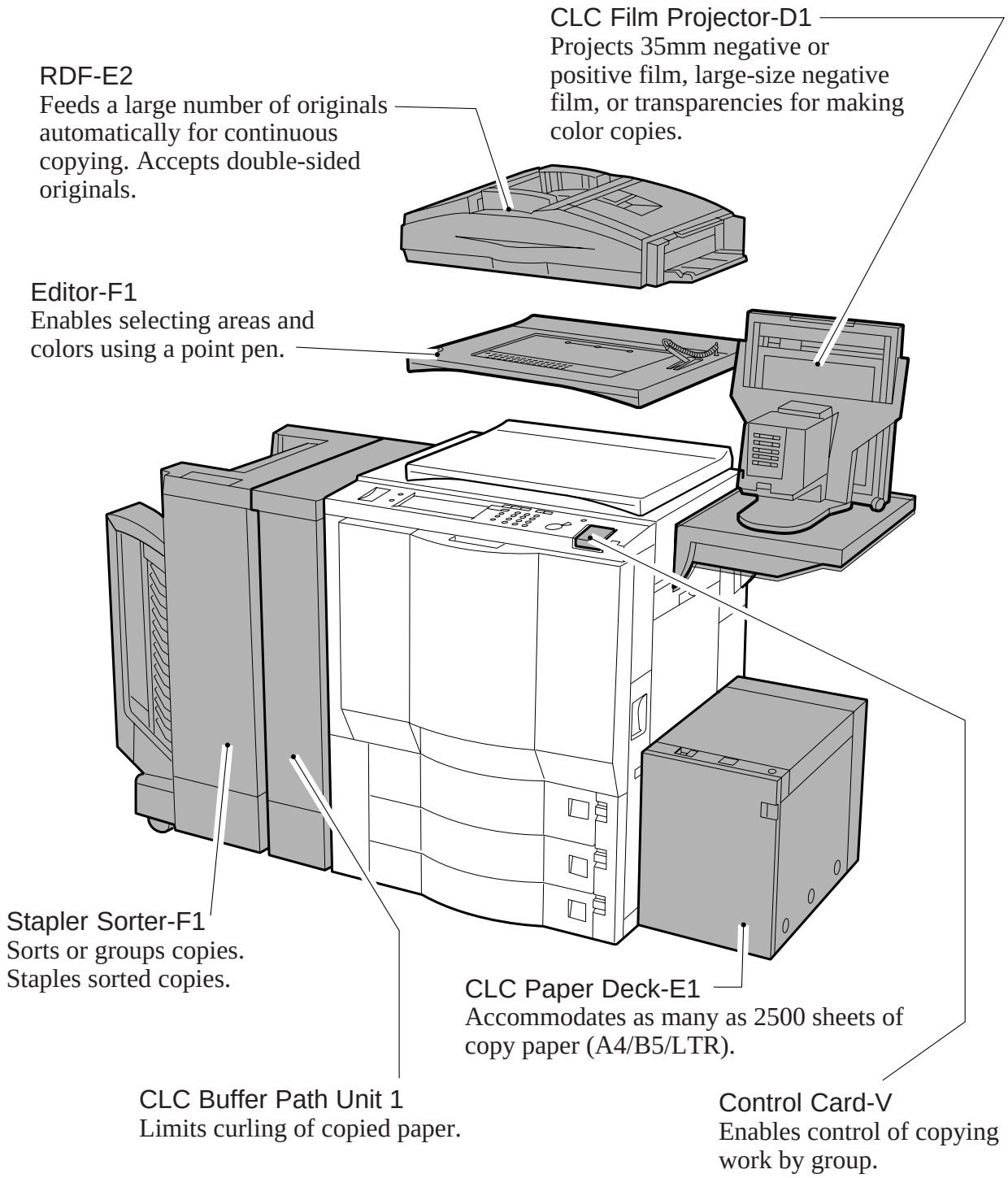
System Configuration

The CLC1120/1130/1150 may be configured as follows to make up a system (the shaded areas indicate accessories):


CLC Film Projector-D1
Projects 35mm negative or positive film, large-size negative film, or transparencies for making color copies.
RDF-E2
Feeds a large number of originals automatically for continuous copying. Accepts double-sided originals.
Editor-F1
Enables selecting areas and colors using a point pen.
Stapler Sorter-F1
Sorts or groups copies. Staples sorted copies.
CLC Paper Deck-E1
Accommodates as many as 2500 sheets of copy paper (A4/B5/LTR).
CLC Buffer Path Unit 1
Limits curling of copied paper.
Control Card-V
Enables control of copying work by group.

The figures above represents the CLC1150; however, the CLC1120/1130 may be configure in the same way.

CLC1120: 2-cassette model
CLC1130: 3-cassette model
CLC1150: 2-cassette model with a duplexing unit.

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CHAPTER 1

GENERAL DESCRIPTION

This chapter shows the copiers specifications, and provides an outline of how to operate the copier and how copies are generated.

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I. FEATURES

1. High Image Quality

The copier uses micro-diameter toner and a limited amount of silicone oil, ensuring a thin layer of toner on transparencies. It allows changing the hues of magenta toner and, together with the use of a direct mapping method, enables a wider range of color reproduction.

2. High Productivity

The copier turns out as many as 11 copies per minute in full color, or 42 mono-color copies. It takes as little as 18.4 sec to generate each first copy.

3. High Stability

The copier uses a new method to control the concentration of toner, promising stable production of high-quality copies.

4. Varied Transfer Materials

The copier allows the use of paper from as thin as 64 g/m^2 to as thick as 209 g/m^2.

5. Large Source of Paper

The addition of accessories will equip the copier with a paper source ready to provide as many as 4400 sheets.

3 Cassettes (standard):	550 sheets x 3 cassettes (CLC1130 only; for CLC1120/1150, 550 sheets x 2 cassettes)
Multifeeder:	250 sheets
CLC Paper Deck-E1*:	2500 sheets

*Accessory.

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II. SPECIFICATIONS

A. Type

Item	Specifications
Body	Console (reader and printer constructed as one)
Copyboard	Fixed
Light source	Halogen lamp
Lens	Arranged in an array
Image reader	Photocell (BRG line CCD; fixed, mirror scanning)
Photosensitive medium	OPC drum (180-mm dia.)

Table 1-201

B. System

Item	Specifications
Copying	Laser beam indirect photostatic transfer
Charging	Corona
Exposure	Slit, laser beam
Contrast adjustment	Automatic
Development	Dry toner projection
Toner supply	Manual (345 g/bottle)
Pickup	Cassette x 2 (CLC1120/1150), cassette x 3 (CLC1130), multifeeder tray, duplexing unit (CLC1150)
Attraction	Pre-transfer static attraction
Transfer	Blade transfer
Separation	Separation claw, separation pushup roll (separation charging assembly as auxiliary mechanism)
Cleaning	Cleaning blade
Fixing	Heat roller Upper: 540 W (100/120 V), 700 W (230 V) Lower: 500 W (common for all models)

Note: The CLC1120 is available only as a non-Japanese model.

Table 1-202

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C. Functions

Item	Specifications
Resolution	Reader: 400 x 400 dpi Recorder: 800-equivalent x 400 dpi
Gradation	256 gradations
Original type	Sheet, book, 3-D object (2 kg max.)
Maximum original size	A3 (297 x 420 mm) / 279.4 x 431.8 mm (11 x 17)
Copy size	AB: 6R6E (Japanese) Inch/A: 5R4E (North or Central America) AB/Inch: 6R5E (Asia, Oceania, South America)
Zoom	25% to 400% (in 1% increments)
Wait time	8 min 30 sec or less (at 20°C) ; 120V 8 min or less (at 20°C) ; 230V
First copy time (w/o pre-scanning)	Less than 18.1 sec (full color) Less than 9.6 sec (mono color)
Continuous copying	1 to 100 sheets
Copying speed	See Table 1-206.
Copy size	Cassette: B5 (257 x 182 mm)/LTR to A3 (297 x 420 mm)/279.4 x 431.8 mm (11 x 17) Multifeeder: B5 (257 x 182 mm) to A3 (297 x 420 mm)/ 279.4 x 431.8 mm (11 x 17) + extra length size (12 x 18)
Copy paper type	Cassette: Plain paper (64 to 105 g/m^2), transparency (A4/LTR) Multifeeder: Plain paper (64 to 209 g/m^2), transparency (A4/LTR) Auto double-sided: Plain paper only (90 to 105 g/m^2) Multifeeder double-sided: Plain paper only (90 to 209 g/m^2)
Cassette	No claw, front loading, 60 mm deep (about 550 sheets of 81.4 g/m^2)
Multifeeder	250 sheets (81.4 g/m^2)
Duplexing unit	50 sheets (105 g/m^2)
Copy tray	100 sheets 981.4 g/m^2)
Image margin	Leading edge: 8.0 ± 1.5 mm (8.0 ± 2.0 mm) Trailing edge: 2.5 ± 1.5 mm (4.5 ± 2.0 mm) Left/right: 2.0 ± 1.5 mm (2.0 ± 1.5 mm) Parentheses represent double-sided copying.
Auto clear	Yes, 2-min standard (may be changed between 0 and 9 min)
Auto power-off	Yes , 1-hr standard (may be changed between 0 and 24hr)
Power Save mode	Yes , (Saving level may be either -10%, -25%, -50%, or non-recovery)
Accessories	RDF-E2/RDF-E2 CLC1100 Series Power Supply Kit Stapler Sorter-F1/CLC Buffer Pass Unit 1 CLC Paper Deck-E1 CLC Film Projector-D1 Editor-F1 CLC IP-ED Board-B1 (hereafter, IP-ED Board) CLC Interface Board-D1 (hereafter, IP-IF Board) Document Holder-E1 Cassette Heater Kit-15, Cassette Heater Kit-16 (non-Japanese) Control Card-V Copy Data Controller-A1 Remote Diagnostic Device II

Table 1-203

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D. Others

Item	Specifications
Operating environment	Temperature: 15° to 30°C / 59 to 86 °F Humidity: 5% to 80% Atmospheric pressure: 810 to 1013 hPa (0.8 to 1.0 atm)
Power supply	100V / 50, 60Hz 120V / 60Hz, 230V / 50Hz
Serial No.	CLC1120: NNE ***** NND ***** PNJ ***** RNC ***** SND ***** UND ***** CLC1130: LNC ***** PNM ***** QND ***** RNE ***** SNC ***** TNC ***** UNC ***** PNR ***** CLC1150: LNB ***** NNC ***** PNB ***** QNB ***** RNB ***** SNB ***** TNB ***** UNB ***** PNH *****
Maximum power consumption	1.5 kW or less Copying: 719 Wh or less (reference only) Standby: 338 Wh or less (reference only)
Noise	Copying: 77 dB (power sound level) Standby: 95 dB (power sound level)
Ozone	0.02 ppm or less (average; 0.05 ppm max.)
Dimensions	Width: 768 mm / 30.2 in Depth: 774 mm / 30.5 in Height: 1000 mm / 39.4 in
Weight	291.5 kg / 642.5 lb (approx.; CLC1150) 277.5 kg / 611.6 lb (approx.; CLC1130) 272.5 kg / 600.6 lb (approx.; CLC1120)
Consumables	Copy paper: Keep wrapped, and protect against moisture. Toner: Protect against direct sunlight, and keep under 40°C, 85%.

Table 1-204

E. Default Ratios

a. Japan Australia, others (6R5E)

Item	Enlargement	Reduction
Default ratio	I 1 : 1.154 II 1 : 1.224 III 1 : 1.414 IV 1 : 2.000 V 1 : 4.000	I 1 : 0.250 II 1 : 0.500 III 1 : 0.611 IV 1 : 0.707 V 1 : 0.816 VI 1 : 0.865

Table 1-205a

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b. North America (5R4E)

Item	Enlargement	Reduction
Default ratio	I 1 : 1.214 II 1 : 1.294 III 1 : 2.000 IV 1 : 4.000	I 1 : 0.25 II 1 : 0.50 III 1 : 0.647 IV 1 : 0.733 V 1 : 0.785

Table 1-205b

c. Europe (3R3E)

Item	Enlargement	Reduction
Default ratio	I 1 : 1.414 II 1 : 2.000 III 1 : 4.000	I 1 : 0.25 II 1 : 0.50 III 1 : 0.707

Table 1-205c

F. Copying Speed

Size	Copy paper size	copies/min (full color)	copies/min (mono color)
A3 (297 x 420 mm)	A3	5.5	21
A4 (210 x 297 mm)	A4	11	42
AAR (297 x 210 mm)	A4R	5.5	21
B4 (257 x 364 mm)	B4	5.5	21
B5 (182 x 257 mm)	B5	11	42
279.4 x 431.8 mm (11” x 17”)	11 x 17	5.5	21
LTR	LTR	11	42
LTRR	LTRR	5.5	21
LGL	LGL	5.5	21

Table 1-206

Specifications are subject to change for product improvement.

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G. CLC PAPER DECK-E1

Item	Specifications
Pickup	No claw (retard)
Storage	Side tray
Copy paper type	Plain paper (64 to 105 g/m^2)
Copy paper size	A4, B5, LTR
Storage size	2500 sheets (105 g/m^2)
Serial No.	ZRU ****** ZRT ***** ZRS *****
Paper size switch (OPTION>ACC>DK-P)	By size guide plate in steps and in service mode
Dimensions	Width: 323.2 mm / 127 in Depth: 591 mm / 23.3 in Height: 432 mm / 17.0 in
Width	30.6 kg / 67.4 lb
Power supply	DC, from the copier
Operating environment	Same as the copier

Table 1-207

Specifications are subject to change for product improvement.

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III. NAMES OF PARTS

A. External View

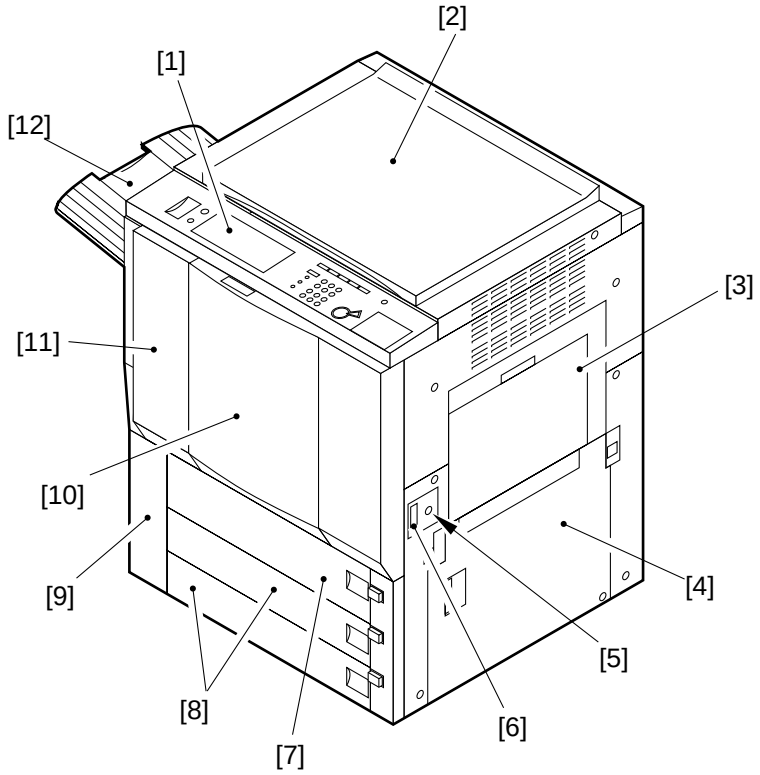

Figure 1-301

[1] Control panel
[2] Copyboard cover
[3] Multifeeder tray
[4] Right lower cover
[5] Control key
[6] Power switch
[7] Pickup cassette (CLC1130)
Duplexing tray (CLC1150)
[8] Pickup cassette 2, 3 (CLC1130)
Pickup cassette 1, 2 (CLC1150)
[9] Waste tone case cover
[10] Right front cover
[11] Left front cover
[12] Copy tray

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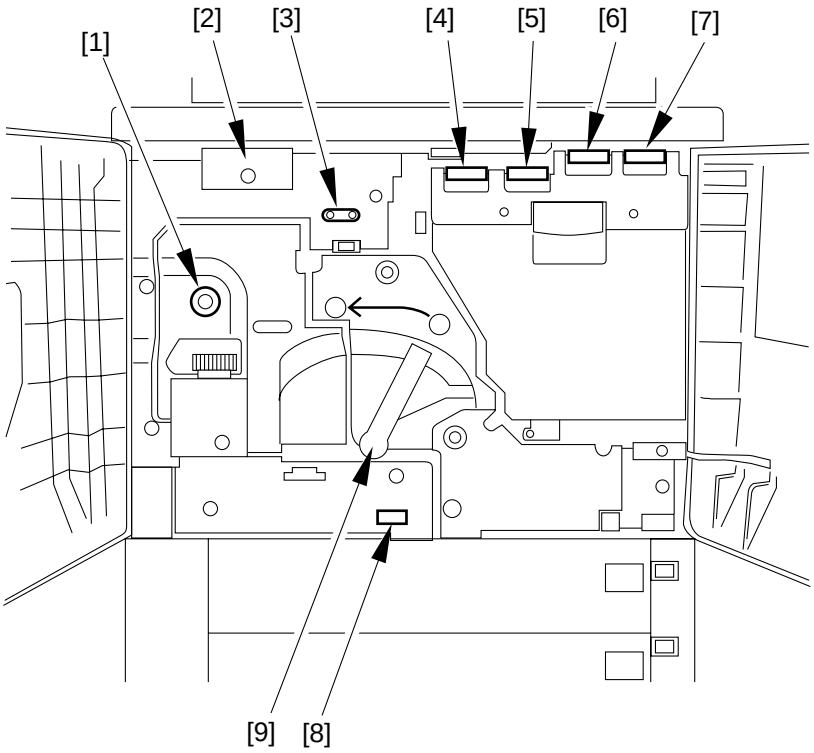

Figure 1-302

[1] Fixing assembly knob
[2] Connector for downloading (bi-Centronics)
[3] Left front door switch
[4] Bk toner supply mouth
[5] M toner supply mouth
[6] C toner supply mouth
[7] Y toner supply mouth
[8] Right front door switch
[9] Unit drawer lever

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B. Cross Section

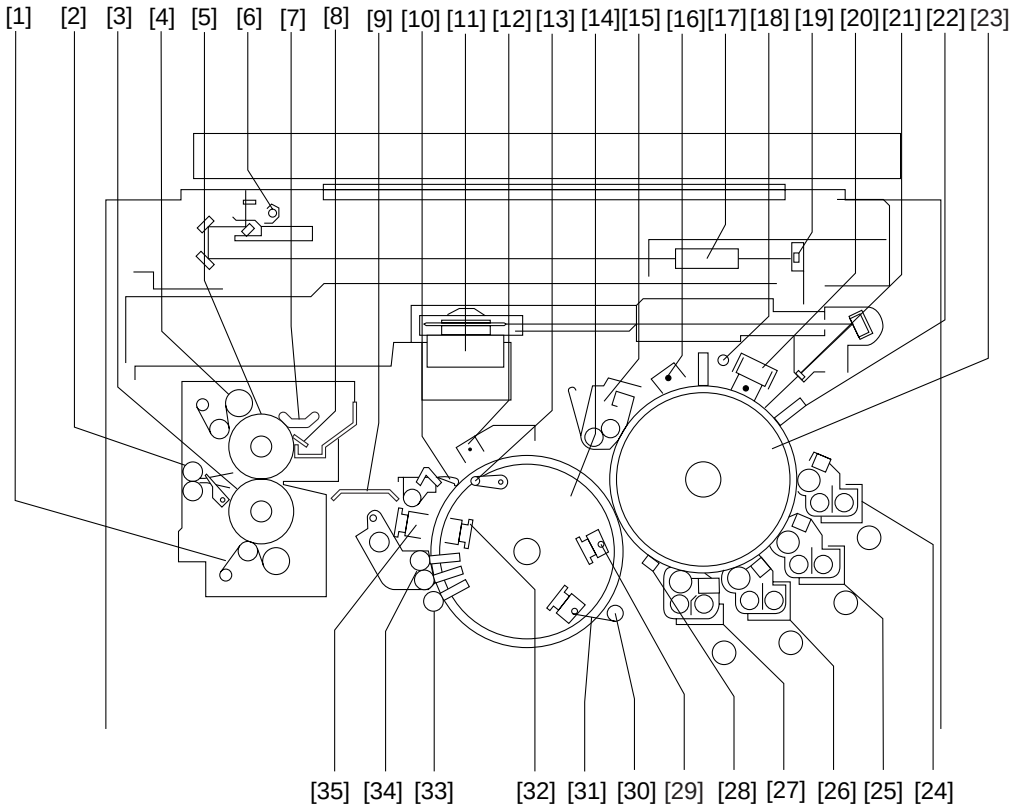

Figure 1-303

[1] Lower cleaning belt
[2] Internal delivery roller
[3] Lower fixing roller
[4] Upper cleaning belt
[5] Upper fixing roller
[6] Scanning lamp
[7] Oil applying felt
[8] Fixing blade (Oil applying blade)
[9] Postcard feeding unit (100V model only)
[10] Separation claw
[11] Laser scanner
[12] Separation charging assembly
[13] Separation push-up roll
[14] Transfer drum
[15] Photosensitive drum cleaner
[16] Post-cleaning charging assembly
[17] Lens
[18] Pre-exposure lamp
[19] CCD
[20] Primary charging assembly
[21] Dust-proofing glass
[22] Potential sensor
[23] Photosensitive drum
[24] Yellow developing assembly
[25] Cyan developing assembly
[26] Magenta developing assembly
[27] Black developing assembly
[28] Black toner concentration sensor
[29] Transfer blade
[30] Attraction roller
[31] Attraction brush
[32] Internal static eliminator
[33] Transfer polishing roller
[34] Transfer drum cleaner
[35] External static eliminator

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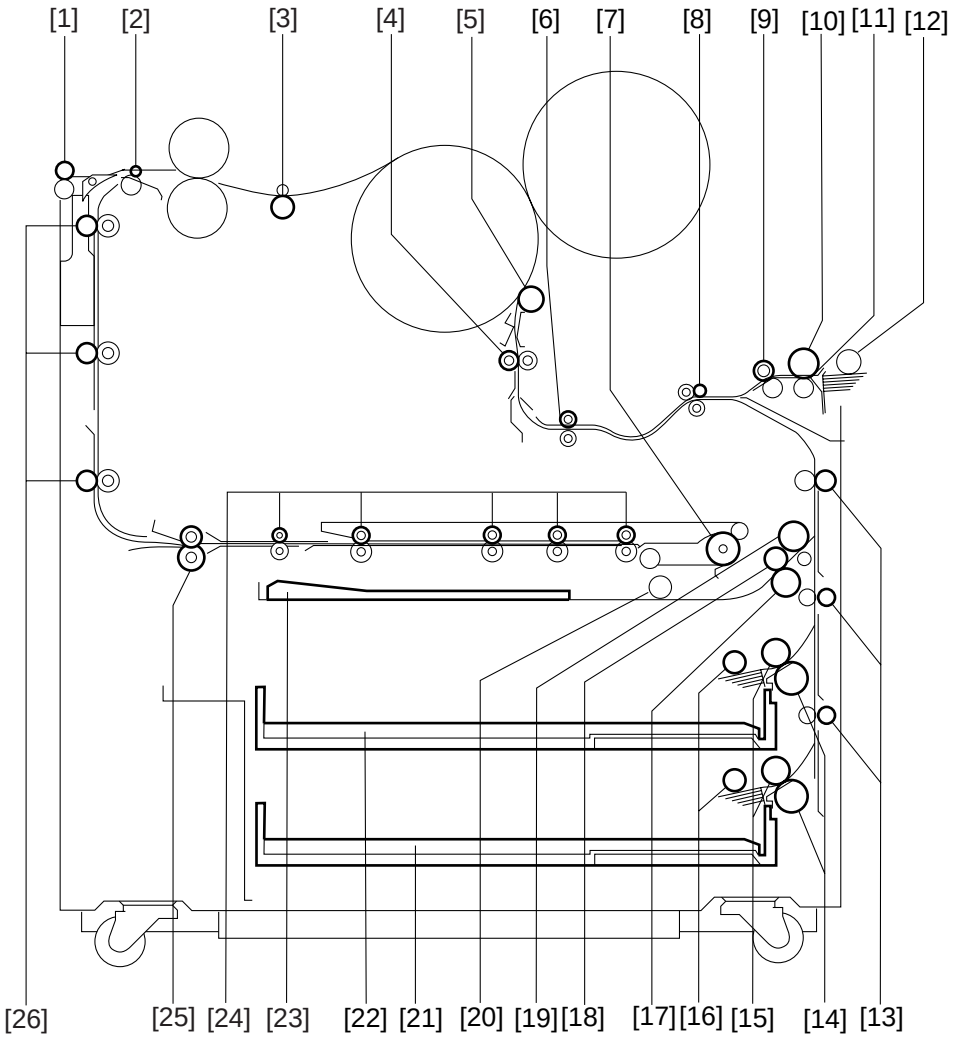

Figure 1-304 (LCL1150)

[1] External delivery roller
[2] Internal delivery roller
[3] Postcard feed roller (100V model only)
[4] Registration roller
[5] Attraction roller
[6] Pre-registration roller 1
[7] Duplexing reversing roller
[8] Pre-registration roller 2
[9] Multifeeder feed roller 2
[10] Multifeeder feed roller 1
[11] Multifeeder separation roller
[12] Multifeeder pickup roller
[13] Pickup vertical path roller 1, 2, 3
[14] Cassette 1/2 separation roller
[15] Cassette 1/2 feed roller
[16] Cassette 1/2 pickup roller
[17] Duplexing feed roller
[18] Duplexing feed roller
[19] Re-pickup feed roller
[20] Duplexing feed roller
[21] Cassette 2
[22] Cassette 1
[23] Duplexing tray
[24] Duplexing path roller 1, 2, 3, 4, 5
[25] Duplexing assembly inlet roller
[26] Delivery vertical path roller 1, 2, 3

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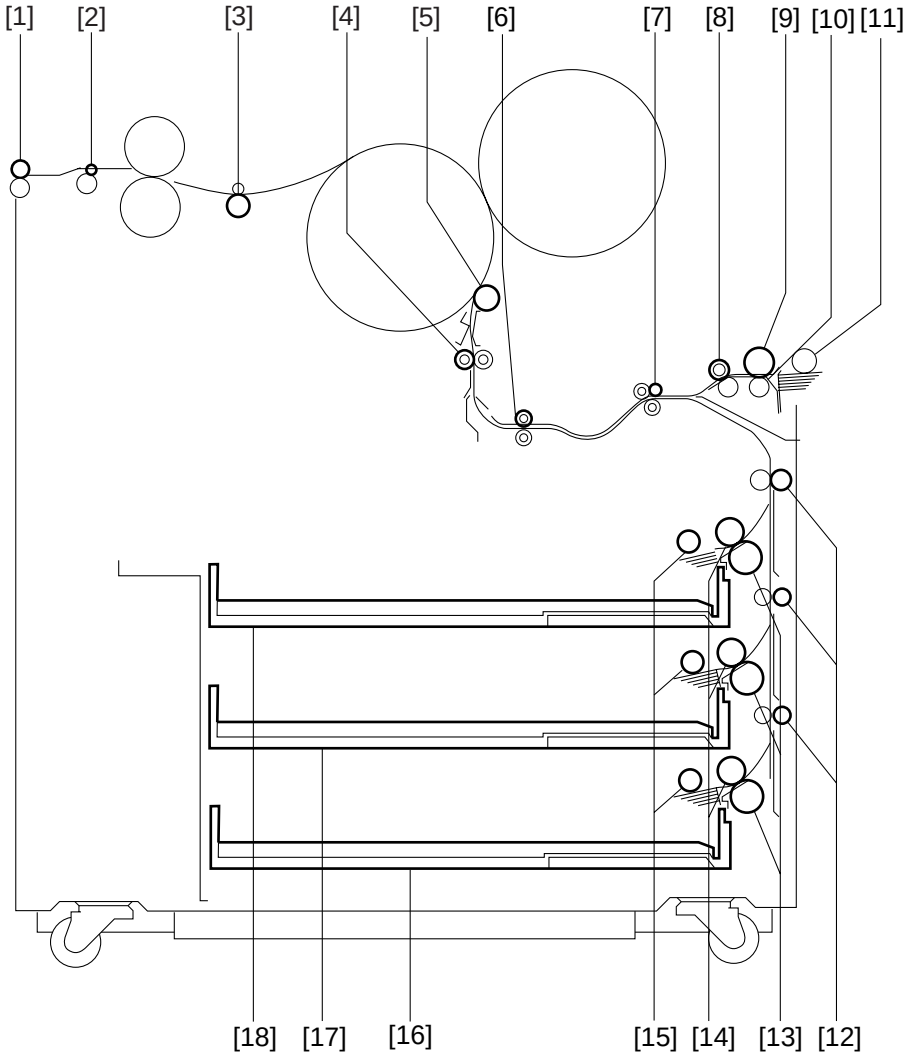

Figure 1-305 (CLC1130)

[1] External delivery roller
[2] Internal delivery roller
[3] Postcard feed roller (100V model only)
[4] Registration roller
[5] Attraction roller
[6] Pre-registration roller 1
[7] Pre-registration roller 2
[8] Multifeeder feed roller 2
[9] Multifeeder feed roller 1
[10] Multifeeder separation roller
[11] Multifeeder pickup roller
[12] Pickup vertical path roller 1, 2, 3
[13] Cassette 1, 2, 3 separation roller
[14] Cassette 1, 2, 3 feed roller
[15] Cassette 1, 2, 3 pickup roller
[16] Cassette 3
[17] Cassette 2
[18] Cassette 1

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IV. USING THE COPIER

A. Control Panel

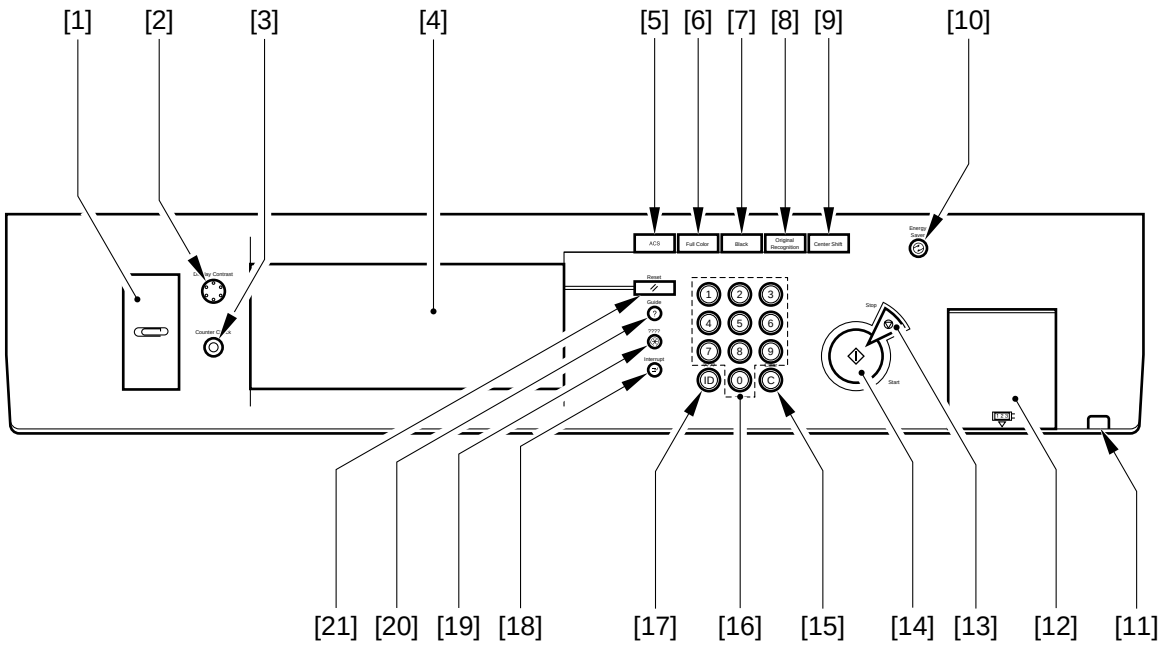

Figure 1-401

[1] Clip tray
[2] Display contrast dial
[3] Counter check key
[4] Touch panel display
[5] ACS key
[6] Full Color key
[7] Black key
[8] Original Recognition
[9] Center Shift key
[10] Energy Saver key
[11] Power lamp
[12] Control card slot (accessory)
[13] Stop key
[14] Start key
[15] Clear key
[16] Numeric keys
[17] ID key
[18] Interrupt key
[19] Additional Functions key
[20] Guide key
[21] Reset key

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B. Extended Functions

Mode	Description
Mode Memory	Use it to save or call back copying mode.
Recall	Use it to call back up to three most recent copying modes, or to make copies using such modes.
Two-Page Separation	Use it to make copies of the left and right pages of an open book on separate sheets by a single operation.
Composion	Use it to reduce two originals automatically and copy them on a single sheet of paper.
Frame Erase	Use it to erase shadows, frame lines, hole images from copies.
Margin	Use it to create a margin along the side of a copy for binding.
Shift	Use it to shift the image of an original to a selected position.
Cover Mode	Use it to insert a sheet of paper different from others to serve as a cover.
Transparency Interleaving	Use it to insert a sheet of paper between transparencies.
Color Balance	Use it to adjust color balance, brightness, hue, and density.
One-Touch Color	Use it to fine-adjust image quality and hue.
Image Quality Adjustment	Use it to remove images of the background or back of the original, or to adjust chromatic space.
Sharpness	Use it to produce sharp copy images.
Area Designation (requires editor, IP-ED Board)	Use it to select an area of an original so as to edit and copy the inside or the outside of the area only.
Framing/Blanking	Use it to select an area of an original so as to copy the inside or the outside of the area only.
Marker Editing (requires IP-ED Board)	Use it to select a black-and-white original using a marking pen so as to color (fill) the area as part of image editing.
Image Combination (requires editor PI-ED Board)	Use it to insert graphics or text to an original.
Image Creation	Use it to take advantage of the mono color, gradation, color filter, or coloring feature.
Color Creation	Use it to take advantage of the negative/positive reversal, image repeat, mirror image, slant, or character slant feature.

Table 1-401

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C. User Mode

Mode		Description
Custom Settings	Standard Key Settings	Use it to register a preference key to be displayed on the Standard screen. (none*)
	Standard Display window	Use it to select the screen to be displayed at power-on. (none*, extension mode, mode memory, call)
	Energy Saver Adjustment	Use it to select an energy saving level. (-10%, -25%, -50%, non-recovery, in which control panel indicators are turned off)
	Inch Entry	Use it to enable input in inches. (on/off*)
	Confirmation window Auto Display	Use it to enable/disable displaying the Settings Check key. (enable/disable*)
	Auto sort	Use it to enable/disable sorting of a single original. (on*/off)
	Drawer Eligibility for APS / ADS	Use it to enable/disable continuing copying operation by switching cassettes when the selected cassette runs out of paper (to one holding the same size paper). (on*/off)
	Audible Tones	Use it to enable/disable input, alarm, and end sounds. (on*/off)
	Exposure Level Switch	Use it to select the number of steps used to select copy density for the Copy Density key. (9 steps*/17 steps)
	Transparency Feed Location	Use it to select a cassette exclusively for transparencies.
	Thin Paper Feed Location	Use it to select a cassette exclusively for think paper (64 to 79 g/m^2).
	Color Sheet Change	Use it to register color sheet printing and colors.
	Feeder Auto Start	Use it to enable/disable automatic copying as soon as copy paper is placed on the manual feeder or the feeder.
	Standard Settings change	Use it to register or initialize standard mode.
	System Settings Password	Use it to register an ID No. for system control. (4 digits)
	Department ID Management	Use it to enable/disable ID control by group, or register and count-control by group ID (4 digits).
	Custom Settings Initialization	Use it to initialize settings to factory settings.

* : default.

Table 1-402a

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Mode		Description
Timer Settings	Auto Clear Time	Use it to set the time after which the touch panel returns to the Standard screen at the end of operation. (0 to 9 min/2 min*)
	Auto Energy Saver Time	Use it to set the time after which energy save mode starts. (0 min to 8 hr/30 min*)
	Auto Power-Off Time	Use it to set the time after which the power is turned off when the copier is ready for copying or in energy save mode. (0 to 24 hr/1 hr*)
Adjustment/ Cleaning	Zoom Fine Adjustment	Use it to make fine-adjustments if the original size and the copy size have a slight discrepancy in vertical and horizontal reproduction ratios. Range: ±1.0% Unit: 0.1%
	Exposure Recalibration	Use it to correct the density used for the manual density adjustment standard (center graduation).
	Auto Gradation Adjustment	Use it to correct the hue of images.
	Text/Photo Priority	Use it to adjust the slice level used to distinguish between text and photo when the original type is set to “text/printed photo” or “text/silver halide photo.”
	Printer Gradation Adjustment	Use it to smooth out the gradations of color for printer output. (on*/off)
	SWOP Emulation Adjustment	Use it to lower the density of halftone areas to simulate printed hues.
	Feeder Cleaning	Use it to clean the feeder by placing copy paper in the feeder. (The paper will be circulated inside the feeder, thereby removing dirt from the pickup roller assembly.)
	Wire Cleaning	Use it to clean the wires of charging assemblies.
	Original Type Selection for Printer	Use it so that the output images from the controller match the types of originals used.

* : default.

Table 1-402b

V. DAILY MAINTENANCE BY THE USER

Instruct the user to clean the copyboard glass and the copyboard cover once a week without fail. (To clean, wipe the part with a cloth moistened (well wrung) with water or solution of mild detergent, and dry wipe it thereafter.)

Caution:
Take care not to scratch the reflecting face (silver colored) of the copyboard cover.

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VI. SAFETY

A. Safety of Laser Light (Class I Laser Product)

The copier is certified as a Class I product under the Radiation Performance Standards set forth in 1968 by the Department of Health and Human Services (DHHS) of the United States, indicating that the copier will not emit harmful laser radiation. (The copier's laser mechanisms are contained in a protective housing and enclosed by external covers so that its laser beam is fully blocked while it is in use.)

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B. CDRH Regulations

On August 2, 1976, the Center for Devices and Radiological Health (CDRH) of the US Food and Drug Administration put into force a set of regulations governing laser products.

The regulations apply to laser products produced on and after August 1, 1976, and the sale of laser products within the US is prohibited unless they show compliance with the regulations.

Figure 1-602 shows the label certifying compliance with the CDRH regulations, and all laser products to be sold in the US must bear a copy of the label.

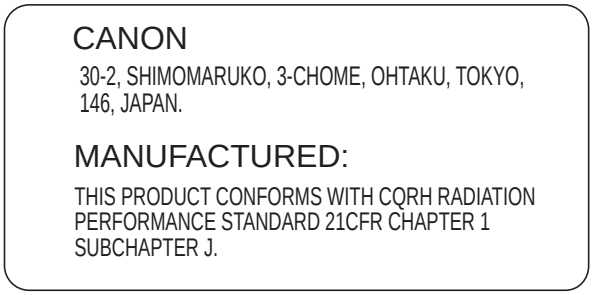

Figure 1-601 CDRH Compliance Label

Caution:
The text may differ from model to model.

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C. Handling the Laser Assembly

Be sure to take extra care whenever servicing areas of the copier's laser assembly, as by avoiding the insertion of any tool having a high reflectance.

Be sure also to remove any watches and rings. They can reflect the laser beam to damage your eyes during work.

The copier's laser beam is a red light. Any covers that may reflect the laser beam bear a copy of the label shown in Figure 1-603. Exercise particular caution whenever servicing inside such covers.

Note:

You will find the label on the copier's laser scanner covers from which laser light can escape.

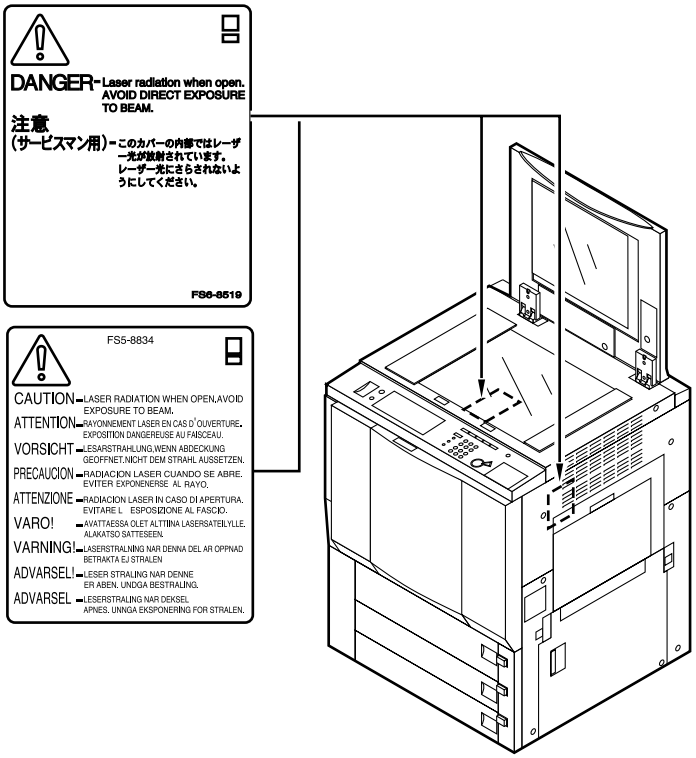
DANGER- Laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
注意
(サービスマン用) - このカバーの内部ではレーザー光が放射されています。レーザー光にさらされないようにしてください。
FS6-8519
FS5-8834
CAUTION - LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ATTENTION - RAYONNEMENT LASER EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT - LESARSTRAHLUNG, WENN ABDECKUNG GEOFFNET, NICHT DEM STRAHL AUSSETZEN.
PRECAUCION - RADIACION LASER CUANDO SE ABRE. EVITER EXPONENERSE AL RAYO.
ATTENZIONE - RADIACION LASER IN CASO DI APERTURA. EVITARE L ESPOSIZIONE AL FASCIO.
VARO! - AVATTAESSA OLET ALTTIINA LASERSATEILYLLE. ALAKATSO SATTESEEN.
VARNING! - LASERSTRALNING NAR DENNA DEL AR OPPNAD BETRAKTA EJ STRALEN
ADVARSEL! - LESER STRALING NAR DENNE ER ABEN. UNDGA BESTRALING.
ADVARSEL - LESERSTRALING NAR DEKSEL APNES. UNNGA EKSPONERING FOR STRALEN.

Figure 1-602a

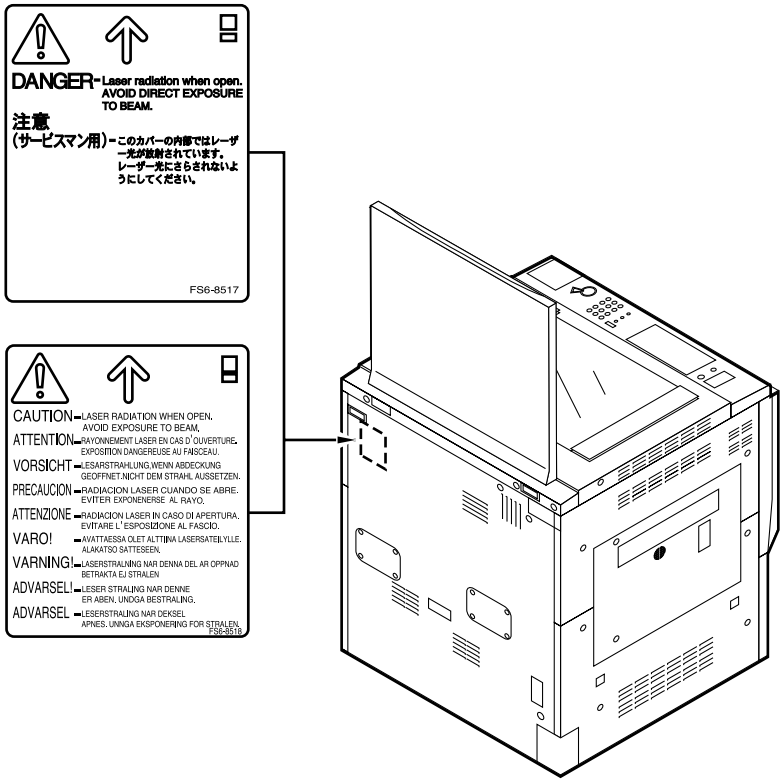
DANGER- Laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.
注意
(サービスマン用)- このカバーの内部ではレーザー光が放射されています。
レーザー光にさらされないようにしてください。
FS6-8517
CAUTION- LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ATTENTION- RAYONNEMENT LASER EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT- LESARSTRAHLUNG,WENN ABDECKUNG GEOFFNET.NICHT DEM STRAHL AUSSETZEN.
PRECAUCION- RADIACION LASER CUANDO SE ABRE. EVITER EXPONERSE AL RAYO.
ATTENZIONE- RADIACION LASER IN CASO DI APERTURA. EVITARE L'ESPOSIZIONE AL FASCIO.
VARO! - AVATTAESSA OLET ALTTIINA LASERSATEILYLLE. ALAKATSO SATTESEEN.
VARNING!- LASERSTRALNING NAR DENNA DEL AR OPPNAD BETRAKTA EJ STRALEN.
ADVARSEL!- LESER STRALING NAR DENNE ER ABEN. UNDGA BESTRALING.
ADVARSEL - LESERSTRALING NAR DEKSEL APNES. UNNGA EKSPONERING FOR STRALEN.
FS6-8518

Figure 1-602b

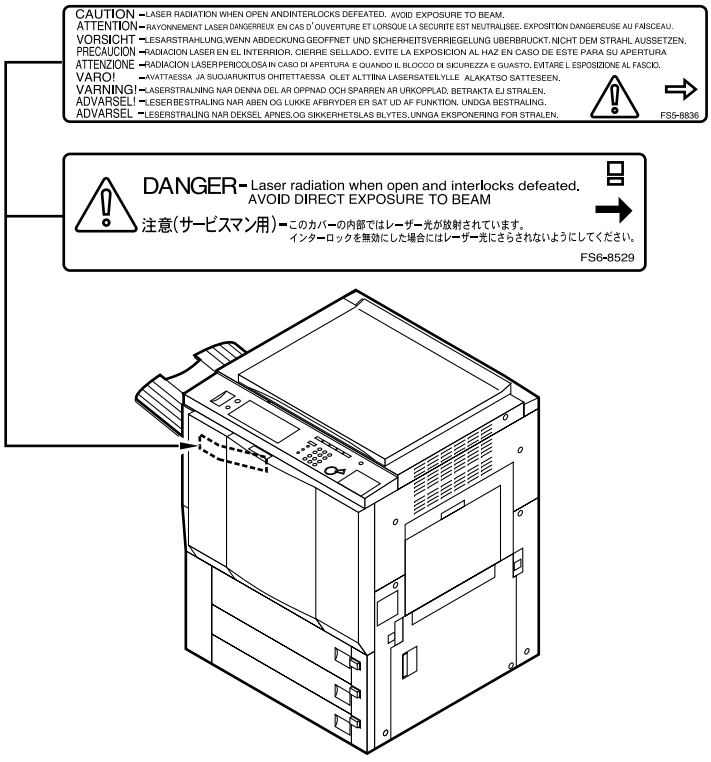
CAUTION - LASER RADIATION WHEN OPEN ANDINTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ATTENTION - RAYONNEMENT LASER DANGEREUX EN CAS D'OUVERTURE ET LORSQUE LA SECURITE EST NEUTRALISEE. EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT - LESARSTRAHLUNG,WENN ABDECKUNG GEOFFNET UND SICHERHEITSVERRIEGELUNG UBERBRUCKT.NICHT DEM STRAHL AUSSETZEN.
PRECAUCION - RADIACION LASER EN EL INTERRIOR. CIERRE SELLADO. EVITE LA EXPOSICION AL HAZ EN CASO DE ESTE PARA SU APERTURA
ATTENZIONE - RADIACION LASER PERICOLOSA IN CASO DI APERTURA E QUANDO IL BLOCCO DI SICUREZZA E GUASTO. EVITARE L ESPOSIZIONE AL FASCIO.
VARO! - AVATTAESSA JA SUOJARUKITUS OHITETTAESSA OLET ALTTIINA LASERSATEILYLLE ALAKATSO SATTESEEN.
VARNING! - LASERSTRALNING NAR DENNA DEL AR OPPNAD OCH SPARREN AR URKOPPLAD. BETRAKTA EJ STRALEN.
ADVARSEL! - LESER BESTRALING NAR ABEN OG LUKKE AFBRYDER ER SAT UD AF FUNKTION. UNDGA BESTRALING.
ADVARSEL - LESERSTRALING NAR DEKSEL APNES.OG SIKKERHETSLAS BLYTES.UNNGA EKSPONERING FOR STRALEN.
FS5-8836
DANGER- Laser radiation when open and interlocks defeated.
AVOID DIRECT EXPOSURE TO BEAM
注意(サービスマン用)- このカバーの内部ではレーザー光が放射されています。
インターロックを無効にした場合にはレーザー光にさらされないようにしてください。
FS6-8529

Figure 1-602c

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D. Safety of Toner

Toner is non-toxic element matter composed of plastic, iron, and small amounts of dyes.

If your skin or clothes have come into contact with toner, be sure to remove as much of it as possible with tissue paper and then wash with water. Hot water will cause toner to turn into jelly and become fused with cloth fibers, resisting removal.

Further, toner tends to react to vinyl material. Keep it away from vinyl materials.

Caution:

Do not dispose of toner into fire. It can lead to explosion.

VII. IMAGE FORMATION

A. Outline

The copier uses an indirect photostatic method, and is constructed as shown in Figure 1-701.

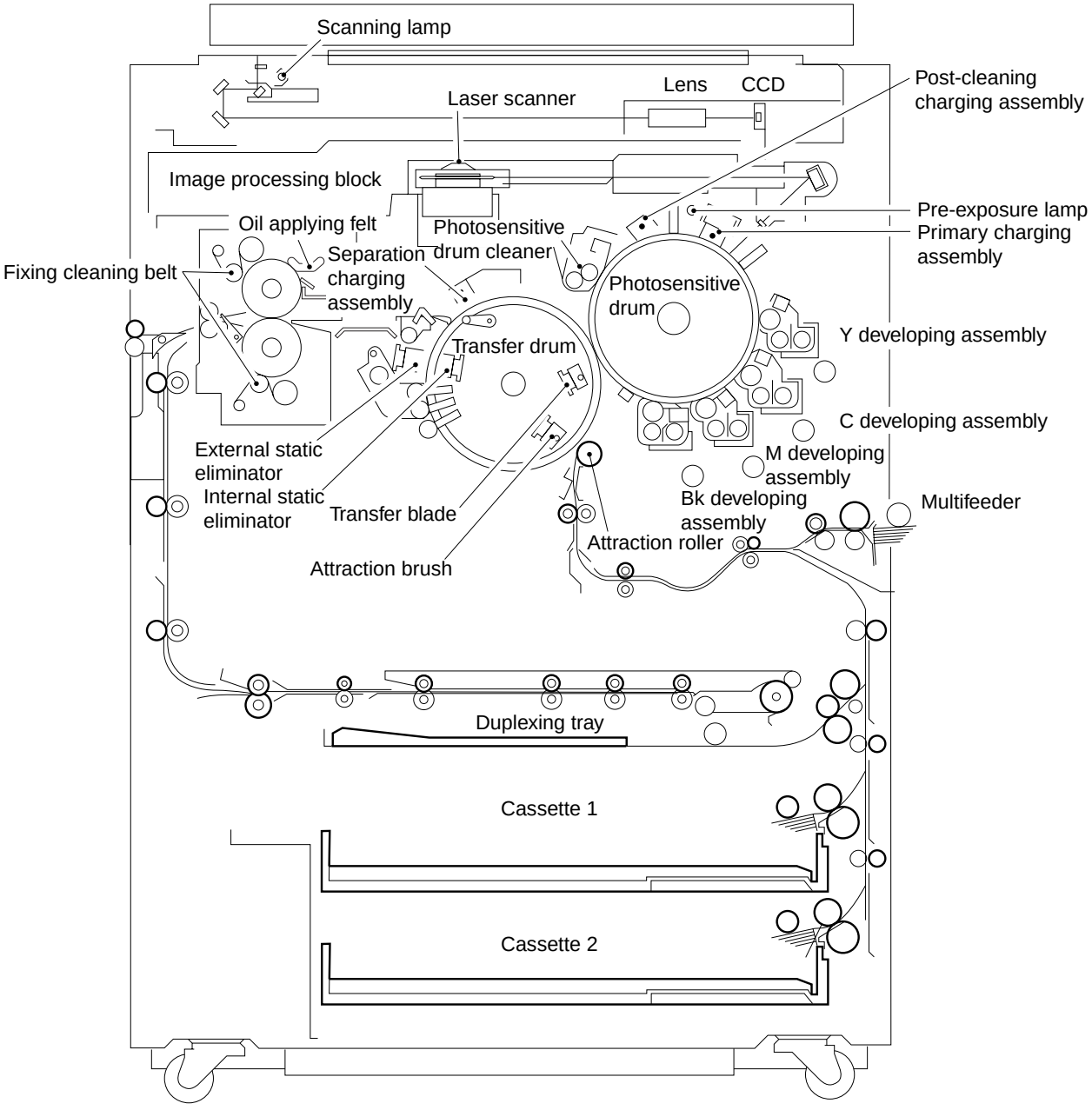

Figure 1-701

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The copier's image formation processes are grouped into the following 11 steps:

Step 1	Pre-exposure
Step 2	Primary charging (negative DC)
Step 3	Laser exposure
Step 4	Development (negative DC bias; AC)
Step 5	Attraction (positive, negative DC)
Step 6	Transfer (positive, negative DC)
Step 7	Separation (negative DC, AC)
Step 8	Photosensitive drum cleaning
Step 9	Post-cleaning charging (negative DC)
Step 10	Fixing
Step 11	Internal/external static removal

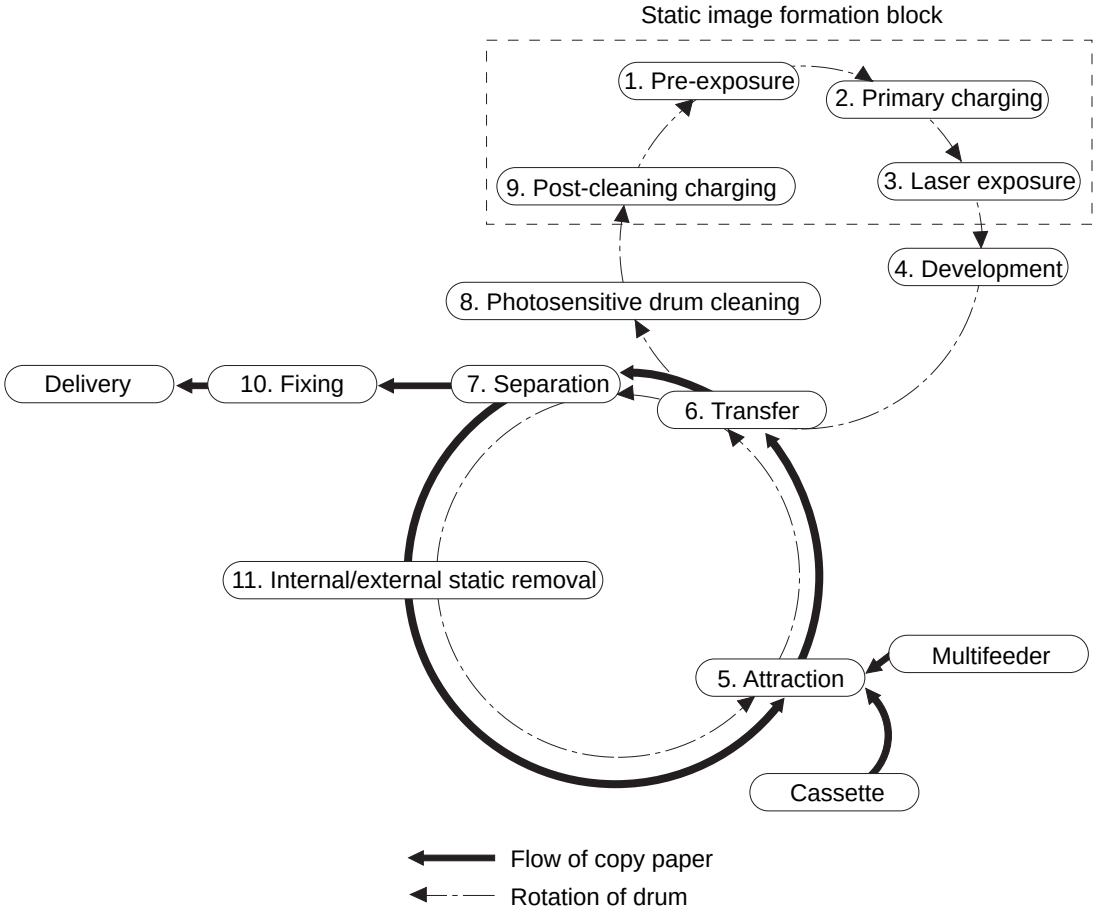

Figure 1-702

B. Auxiliary Process

1. Post-Cleaning Charging

The photosensitive drum may become subject to memories because of transfer discharge, appearing on copy images. To prevent such a problem, a negative DC is applied to the drum thereby evening out the charges and, consequently, potential.

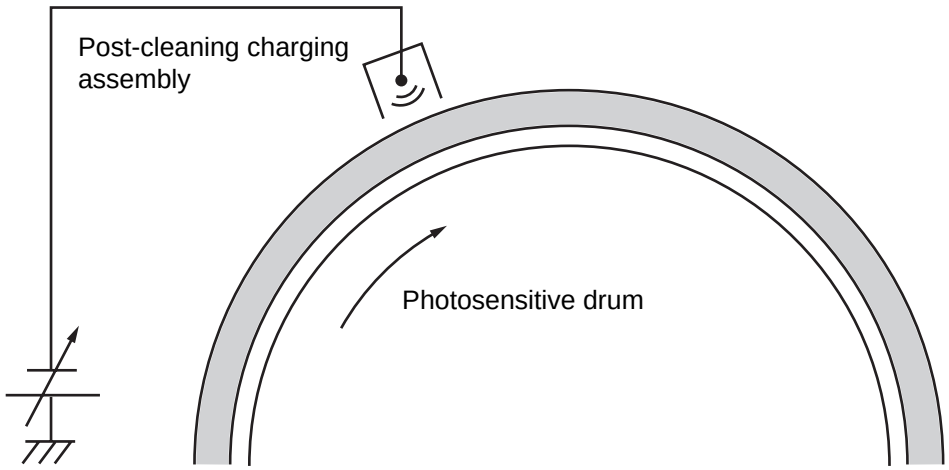

Figure 1-703

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CHAPTER 2

BASIC OPERATION

This chapter explains the copier's basic operations and functions and the relationship between electrical and mechanical systems, and provides an outline of the timing at which various associated parts are driven.

Process speed	200mm/s

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I. OUTLINE OF OPERATIONS

A. Functional Construction

The copier is divided into a total of six functional blocks; i.e., original exposure system, image processing system, laser exposure system, image formation system, pickup/feeding system, and control system.

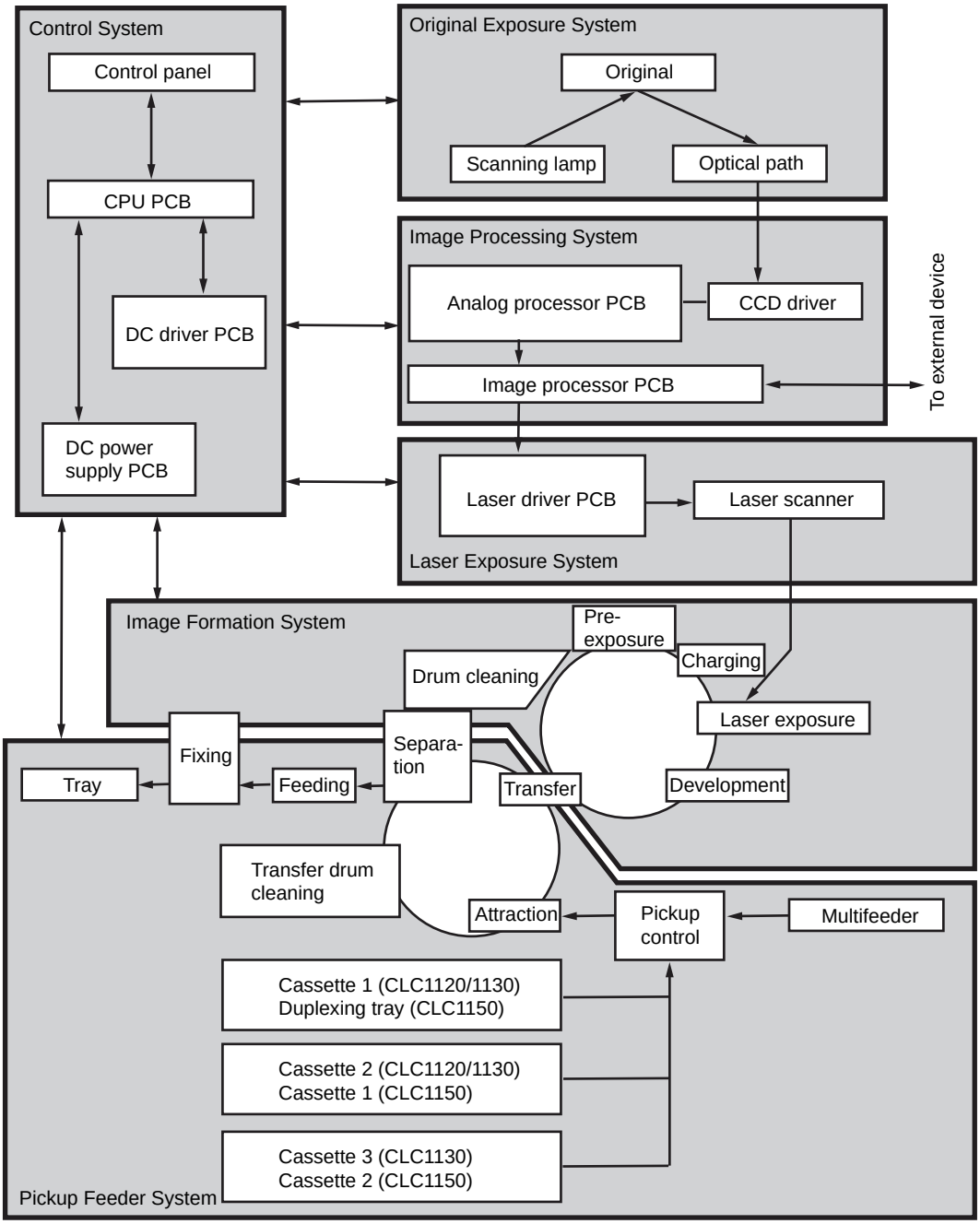

Figure 2-101

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B. Electrical Circuitry

1. Outline

The copier's major electrical functions are controlled by the CPU on the CPU PCB. Table 2-101 shows the functional assignment of the CPU and the functions of the DIMMs and the RAMs.

2. CPU PCB

The CPU PCB is equipped with three CPUs, and this manual refers to these three as PANEL-CPU, R-CPU, and DC-CPU with reference to their functions.

Name	Description
PANEL-CPU	· Controls the control panel, controls service mode, controls control panel controller communication.
Flash memory (DIMM)	· Contains control programs.
RAM	· Stores control data.
R-CPU	· Controls the scanning lamp, controls the scanner motor, controls job management, controls scanner (reading). · Controls image processing, controls fans, controls IPC (RDF, film projector, CC-X). · Controls the editor, controls bi-Centronics communication, controls serial communication.
Flash memory (DIMM)	· Contains control programs.
RAM	· Stores control data.
DC-CPU	· Controls fixing temperature, controls power supply to loads, controls high voltage, controls potential, controls toner supply. · Controls paper feeding, controls output management, controls motors, controls sensors. · Controls solenoids, controls clutches, controls fans, detects paper in cassettes. · Detects original size, controls the paper deck, controls IPC (sorter).
Flash memory (DIMM)	Contains control programs.
RAM	Store control data.

Table 2-101

3. Control Panel

Name	Description
CPU	· Monitors key input, controls buzzer volume, controls LCD activation.

Table 2-102

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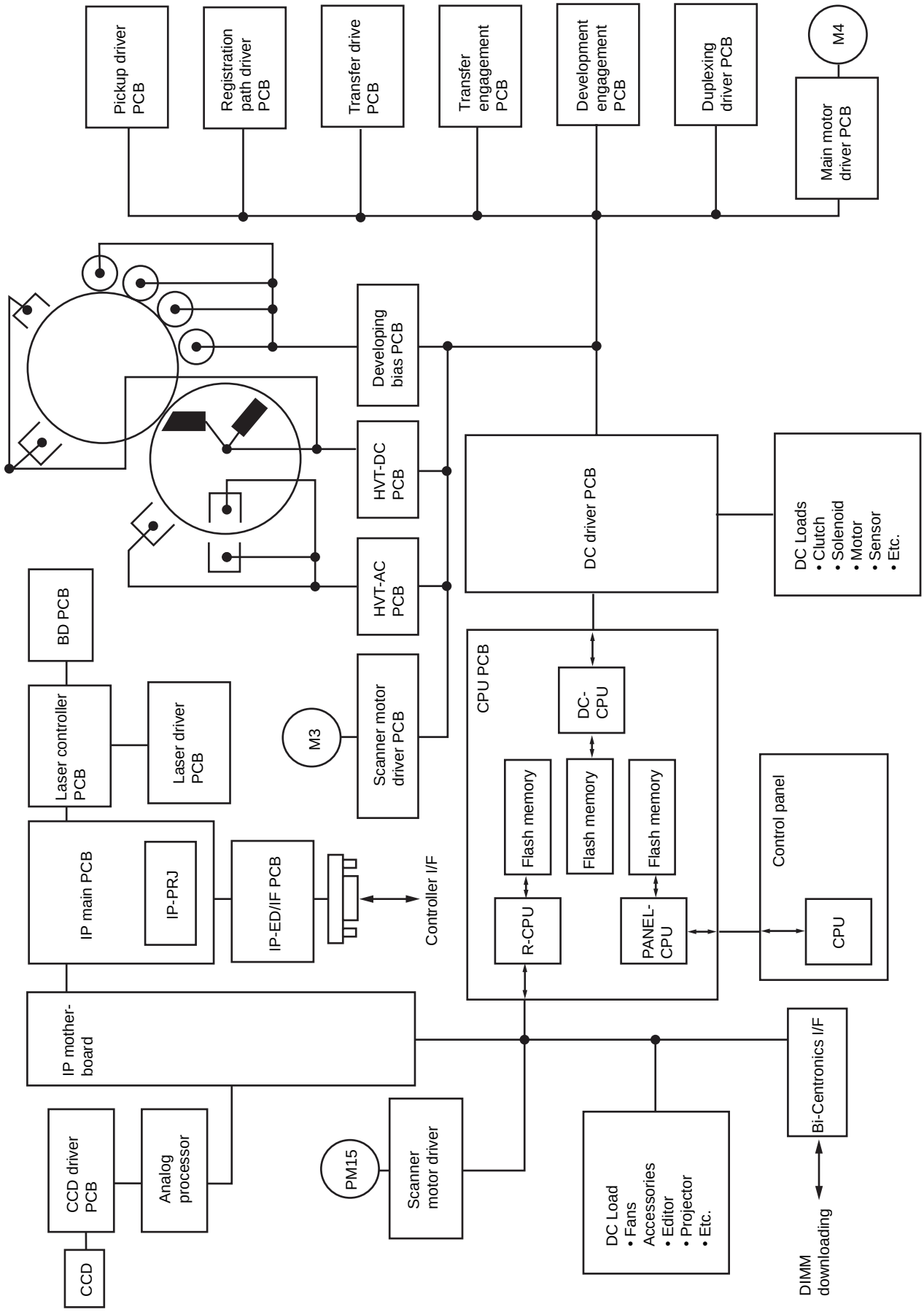

Figure 2-102

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II. BASIC SEQUENCE OF OPERATIONS

A. At Power-On

Figure 2-201 shows the basic sequence of operations executed at power-on.

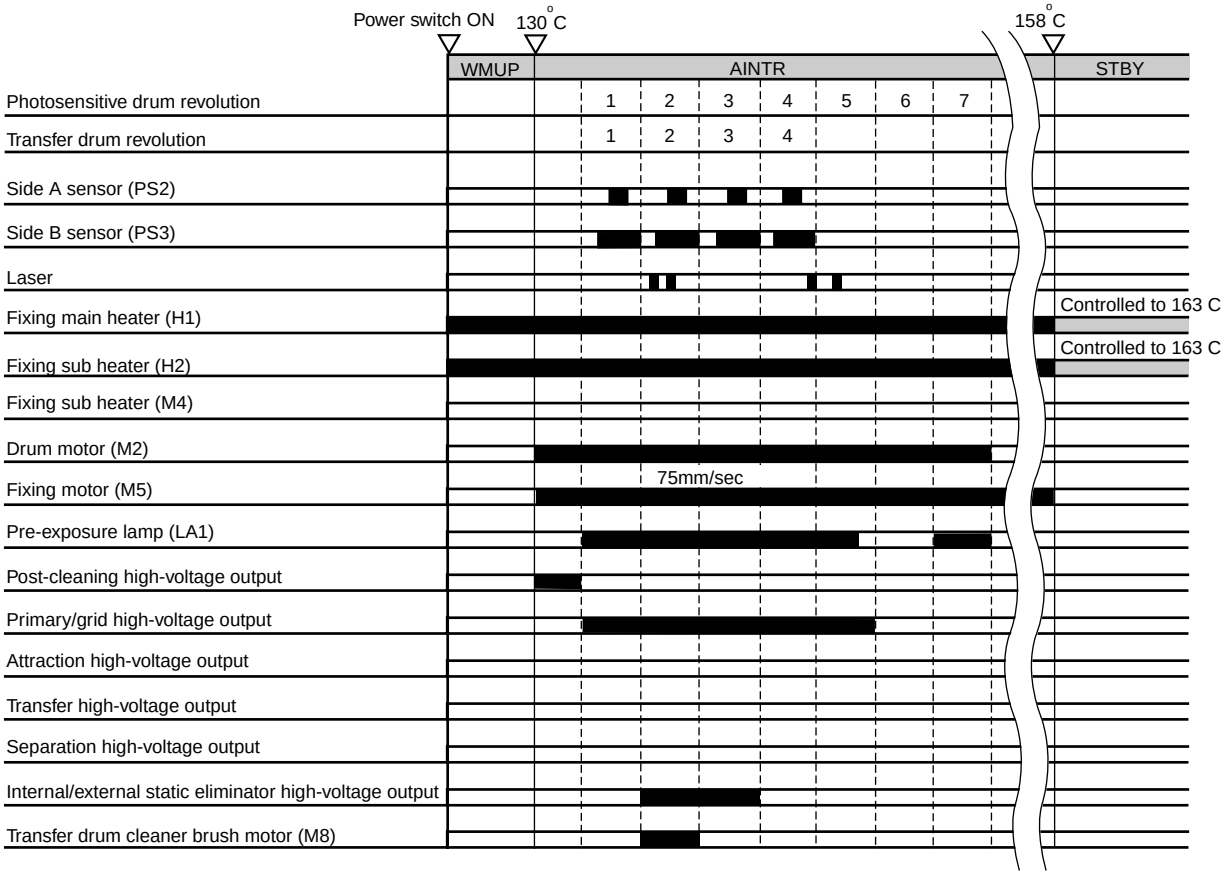

Figure 2-201

a. The copier uses signals from the side A sensor and the side B sensor to find out the position of the transfer drum. (If the copier uses other signals as a reference of control, respective timing charts will be provided.)
b. The external diameter of the transfer drum is the same as that of the photosensitive drum, and the photosensitive drum and the transfer drum come into contact with each other when needed (during copying). The photosensitive drum makes a single rotation for each rotation of the transfer drum.
c. The fixing temperature is indicated in terms of the surface temperature of the fixing roller (the reading of DISPLAY>ANALOG in service mode, i.e., temperature detected by the thermistor).

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Period		Purpose
WMUP (warm-up)	From when the power switch is turned on to when the surface temperature of the upper fixing roller reaches 130°C.	Waits until the fixing roller warms up.
AINTR (initial multiple rotation)	From when the surface temperature of the upper fixing roller reaches 130°C to when it reaches 158°C.	Measures and controls the drum surface potential.
STBY (standby)	From when INTR ends to when the Copy Start key is turned on or the power switch is turned off.	Waits for a press on the Copy Start key or an operation key.

Table 2-201

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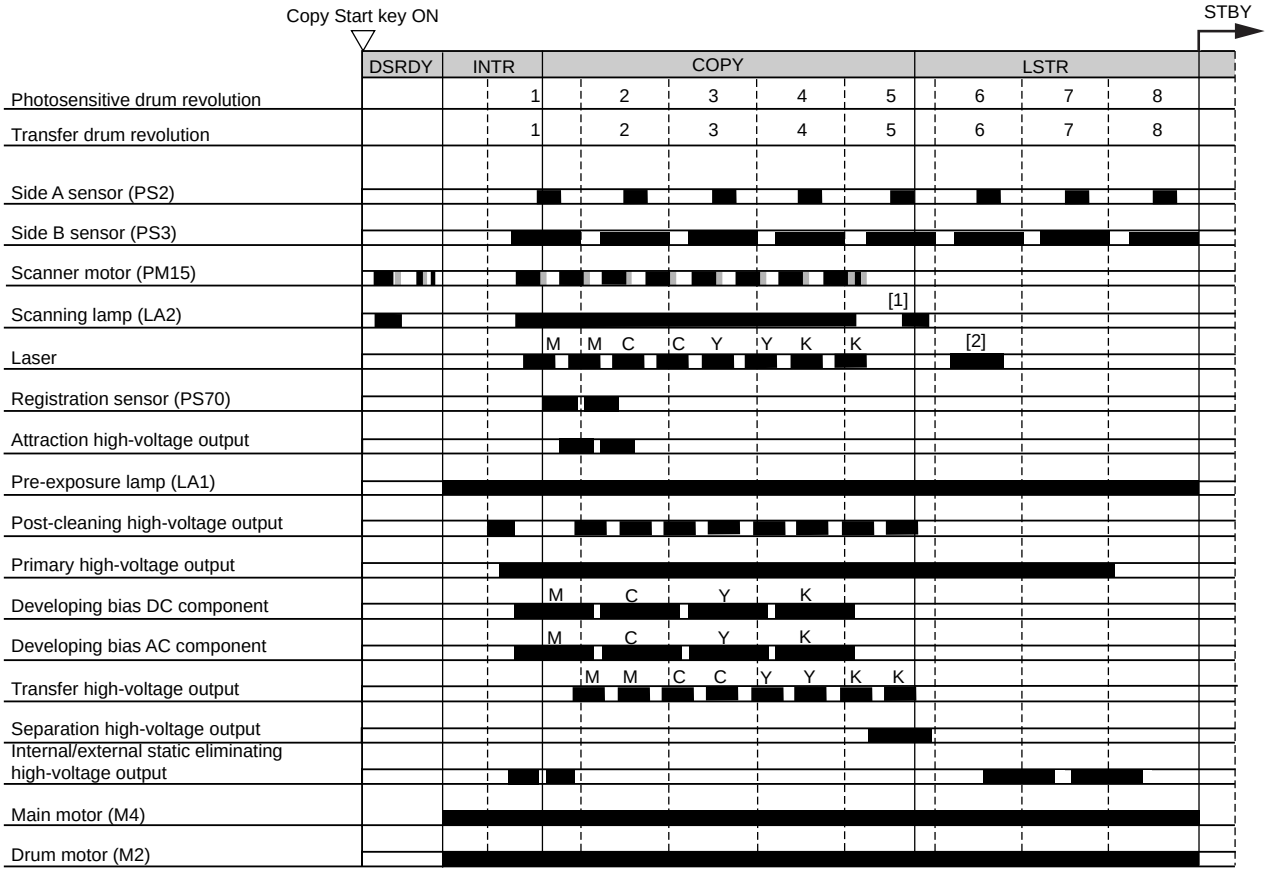
B. Basic Sequence of Operations (copying)

Figure 2-202 shows the basic sequence of operations executed during copying.



[1] Shading correction [2] Drum surface potential control

Figure 2-202 A4/LTR, 2 Copies, Full Color, Direct, Cassette 1

Period		Purpose
DSRDY (scanner ready)	From when the Copy Start key is pressed until when the transfer drum starts to rotate.	Performs an original detection scan.
INTR (initial rotation)	From when DSRDY ends to when attraction of copy paper is started.	Picks up copy paper.
COPY (copy)	From when attraction of copy paper to the transfer drum starts to when all toner is deposited on copy paper.	Turns on and off the laser by video signals, and develops and transfers the selected color.
LSTR (last rotation)	From when COPY ends to when the drum motor stops.	Discharges copy paper. The transfer drum is freed of charges (cleaned). Stabilizes the sensitivity of the photosensitive drum, and measures and controls the surface potential of the drum. Takes measurements for shading correction.

Table 2-202

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C. Generating the Image Leading Edge Signal

1. Outline

The copier controls original exposure, image processing, laser exposure, high voltage, and feeding mechanisms with reference to the leading edge of copy paper (image leading edge signal) on the transfer drum.

The image leading edge signal is generated about 0.29 sec before the distance a (between point of laser exposure on the photosensitive drum and point of transfer) and distance b (between leading edge of copy paper and point of transfer) become equal.

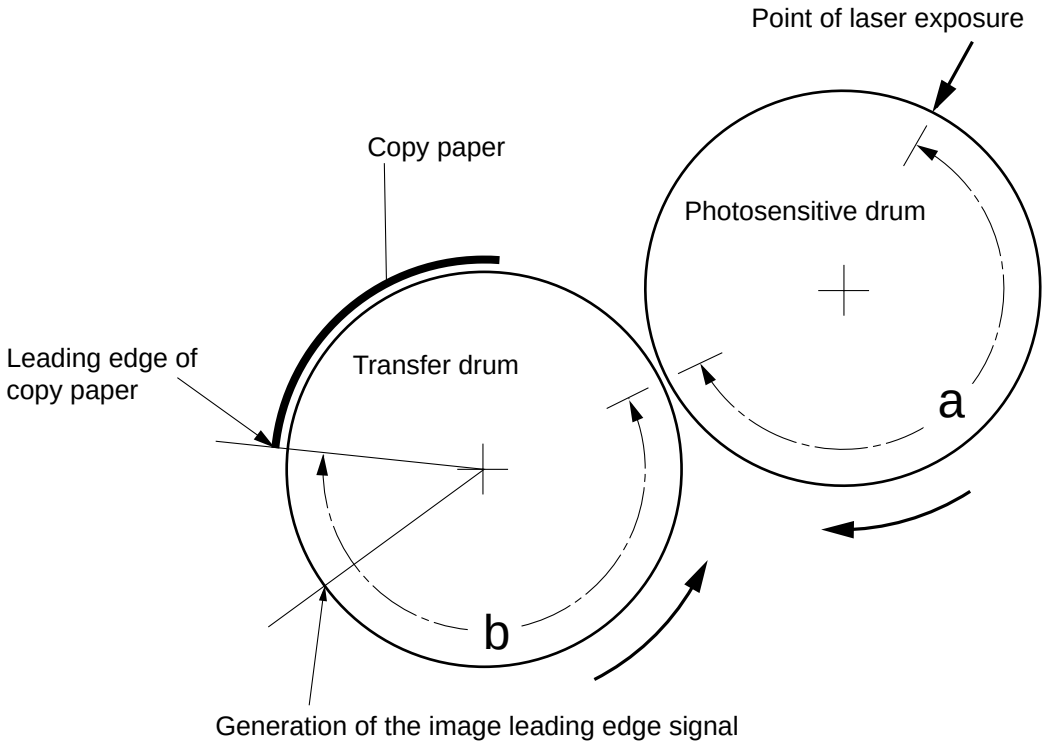

Figure 2-203

2. Controlling Side A and Side B

The transfer drum retains as many as two sheets of copy paper at the same time. As such, two signal plates operating in conjunction with the transfer drum and the sensors (PS2, side A sensor; PS3, side B sensor) found inside the transfer drum are used to generate image leading signals of their own (ITOP-A, ITOP-B).

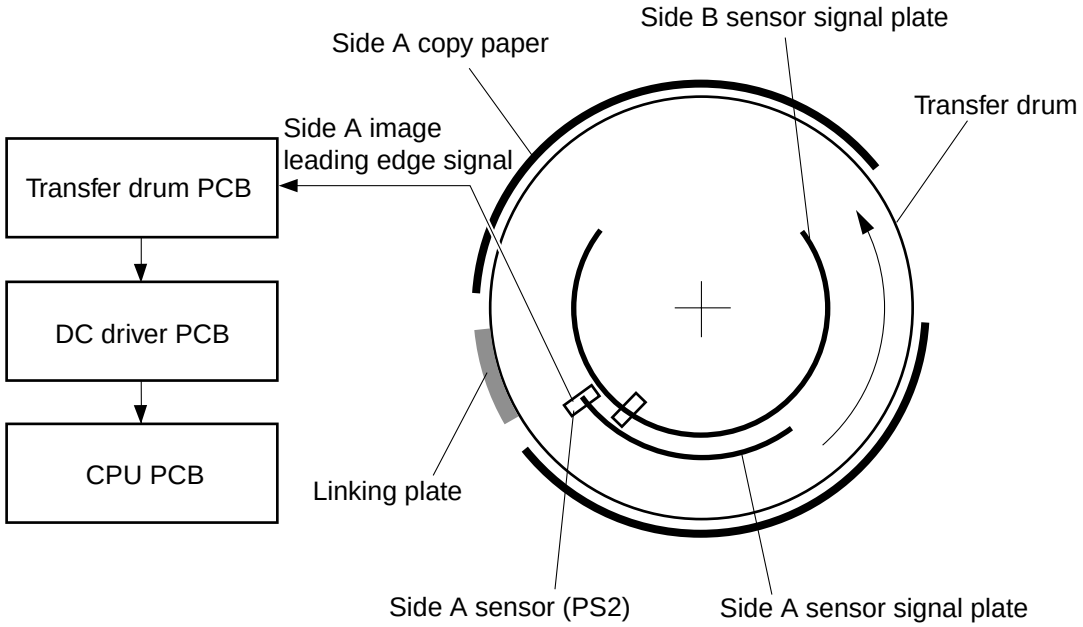

Figure 2-204

a. Transfer Drum When Copying on Side A

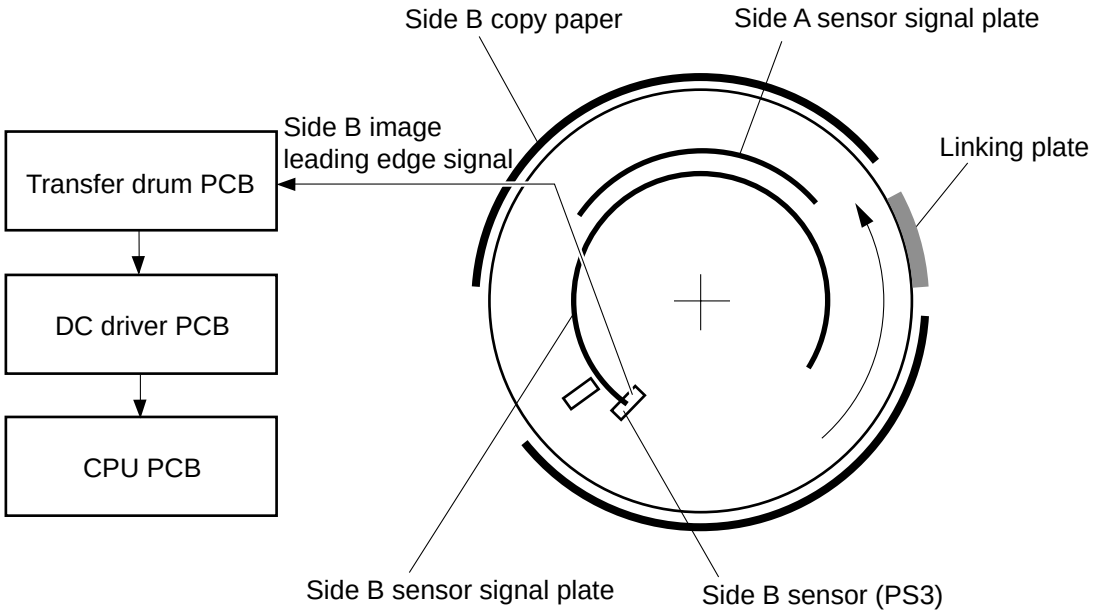

Figure 2-205

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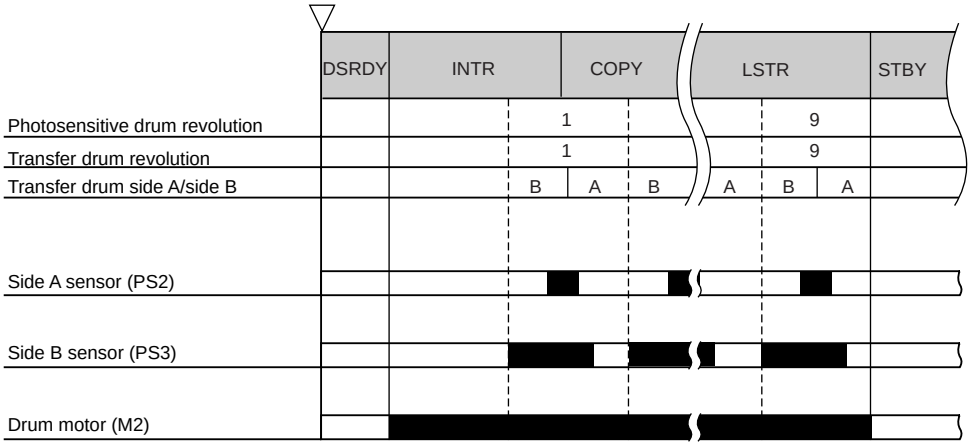

Figure 2-206

b. Transfer Drum When Copying on Side B

The tables that follow show how sheets of copy paper are placed on the transfer drum in each copying mode; in mono-color copying, C, Y, and Bk use the same arrangement as M.

Small size: 216 mm or less (A4/LTR or smaller) in feeding direction.

Large size: 217 mm or more in feeding direction.

2: Indicates the number of sheets of copy paper (2nd sheet).

$\overline{M}$: Indicates the color to develop (e.g., M development).

· In the case of small-size paper, copying starts on side B.

Transfer drum revolution	1	2	3	4	5	6	7	8	9	10	11	12
Leading edge of copy paper	B A	B A	B A	B A	B A	B A	B A	B A	B A	B A	B A	B A

Mono-color (M)	5 small-size sheets	$\frac{1}{M}$ $\frac{2}{M}$	$\frac{3}{M}$ $\frac{4}{M}$	$\frac{5}{M}$									
	3 large-size sheets	$\frac{1}{M}$	$\frac{2}{M}$	$\frac{3}{M}$									
Full-color (MCYBk)	5 small-size sheets	$\frac{1}{M}$ $\frac{2}{M}$	$\frac{1}{C}$ $\frac{2}{C}$	$\frac{1}{Y}$ $\frac{2}{Y}$	$\frac{1}{BK}$ $\frac{2}{BK}$	$\frac{3}{M}$ $\frac{4}{M}$	$\frac{3}{C}$ $\frac{4}{C}$	$\frac{3}{Y}$ $\frac{4}{Y}$	$\frac{3}{BK}$ $\frac{4}{BK}$	$\frac{5}{M}$	$\frac{5}{C}$	$\frac{5}{Y}$	$\frac{5}{BK}$
	3 large-size sheets	$\frac{1}{M}$	$\frac{1}{C}$	$\frac{1}{Y}$	$\frac{1}{BK}$	$\frac{2}{M}$	$\frac{2}{C}$	$\frac{2}{Y}$	$\frac{2}{BK}$	$\frac{3}{M}$	$\frac{3}{C}$	$\frac{3}{Y}$	$\frac{3}{BK}$

Table 2-203

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III. CONTROLLING ELECTRICAL MECHANISMS

A. Controlling the Main Motor (M4)

1. Outline

Table 2-301 shows the functions of the main motor control circuit, and Figure 2-301 shows a block diagram of circuit.

Item	Description
Power supply	38 VDC from the DC power supply PCB.
Drive signal	Drive signal (MNMON) from the DC driver PCB.
Moving/drive parts	Registration roller, attraction roller, developing assembly, multifeeder feed roller.
Control	Turing on/off the main motor. Controlling the main motor to a constant speed. Detects errors.

Table 2-301

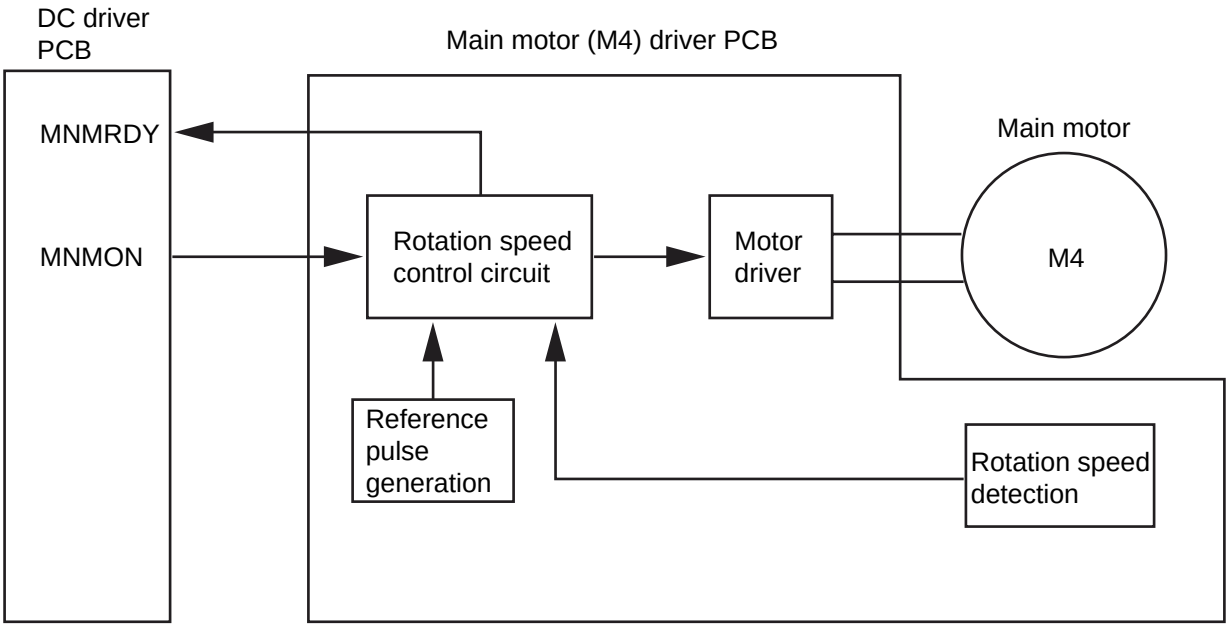

Figure 2-301

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a. Turning On/Off the Main Motor

When the DC-CPU on the CPU PCB causes the main motor drive signal (MNMON) to go '1' through the DC driver PCB, the control circuit on the main motor driver PCB generates drive current to rotate the main motor at a specific speed.

When the drive signal goes '0', on the other hand, the output of the control signal stops, removing the drive current and, thus, stopping the main motor.

b. Controlling the Rotation to a Constant Speed

When the main motor rotates, its speed is detected and communicated to the rotation speed control circuit, which in response compares the speed against pulse signals and exerts control so that the phase of one matches that of the other. At this time, a signal (MNMRDY), used to indicate a state of constant speed, is sent to the CPU PCB.

Related Error Code
E010
If an error causes the rotation speed of the motor to deviate, the main motor ready signal (MNMRDY) goes '0', causing all copier operations to stop (main motor error).

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B. Controlling the Drum Motor (M2)

1. Outline

Table 2-302 shows the functions of the drum motor control circuit, and Figure 2-302 is a block diagram of the circuit.

Item	Description
Power supply	24 VDC from the DC power supply PCB
Drive signal	Drive signal (DRMON) from the DC driver PCB
Operating/drive assembly	Photosensitive drum, transfer drum
Control	Turns on/off the drum motor Controls the speed of the drum motor Checks for errors

Table 2-302

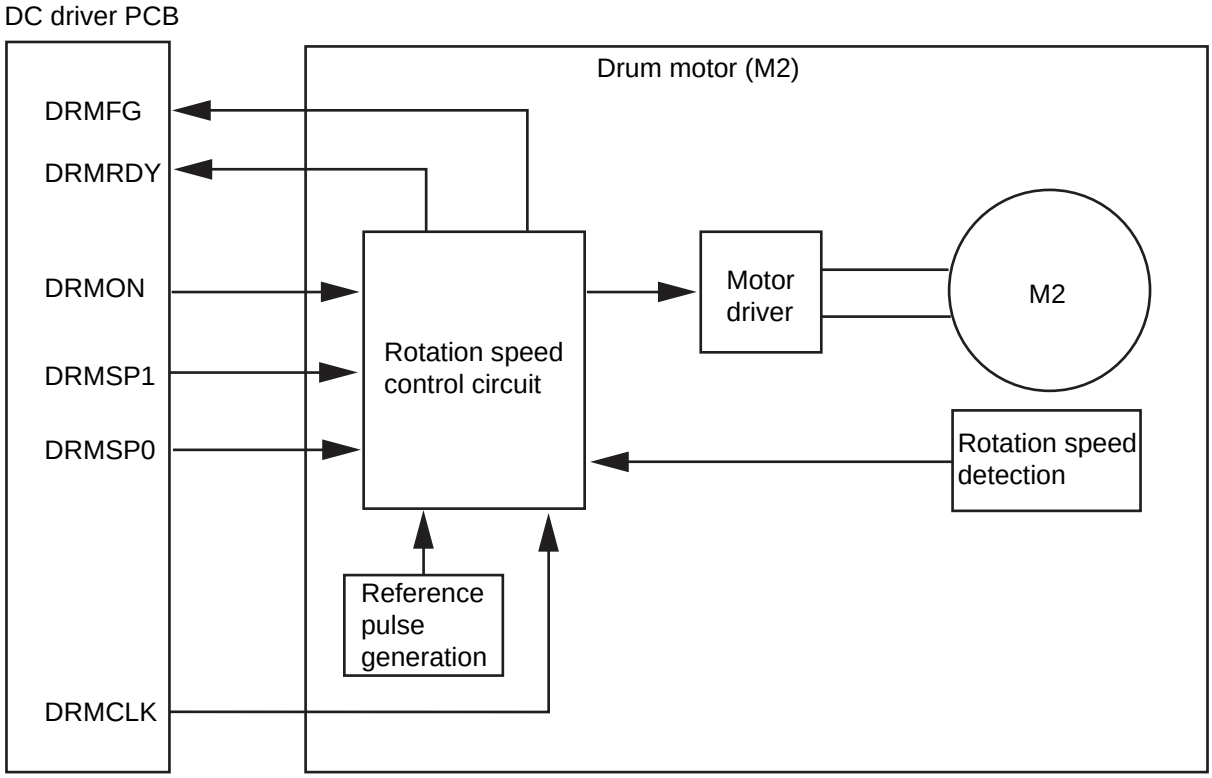

Figure 2-302

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a. Turning On/Off the Drum Motor

When the DC-CPU on the CPU PCB causes the drum motor drive signal (DRMON) to go '1' through the DC driver PCB, the control circuit on the drum motor drive PCB generates drive current to rotate the drum motor at a constant speed.

When the drive signal goes '0', on the other hand, the output of the control signal stops, and the absence of drive current prevents the drum motor from rotating.

b. Controlling the Rotation Speed

The drum motor operates in sync with the drum motor clock signal (DRMCLK) generated from the BD signal so that color displacement otherwise occurring when images are printed may be corrected.

To ensure proper fixing when copying on transparencies or thick paper, the rotation speed is reduced to suit the speed of the fixing motor.

The foregoing speeds are controlled by two speed control signals (DRMSP0, DRMSP1) from the DC driver PCB.

The rotation speed control circuit compares the pulse signals and reference signals (clock signals), and exerts control so that the phase of one matches that of the other. At this time, it sends a signal indicating a state of constant speed (DRMRDY=1) to the DC driver PCB.

It also generates the drum motor FG signal (DRMFG) in keeping with the rotation cycle of the drum motor for counting purposes (drum rotation) and sequential control.

	DRMSPO	DRMSP1
Normal	0	0
Transparency	0	1
Service mode*	1	1

· When checking parts in service mode (FUNCTION>PART-CHK>MTR>6).

Related Error Code

E012
If an error causes the rotation speed of the motor to deviate, the drum motor ready signal (DRMRDY) indicating a state of constant speed will go '0', stopping all operations of the copier (drum motor error).

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C. Inputs to and Outputs from the Major PCBs

Inputs to and Outputs from the CPU PCB (1/4)

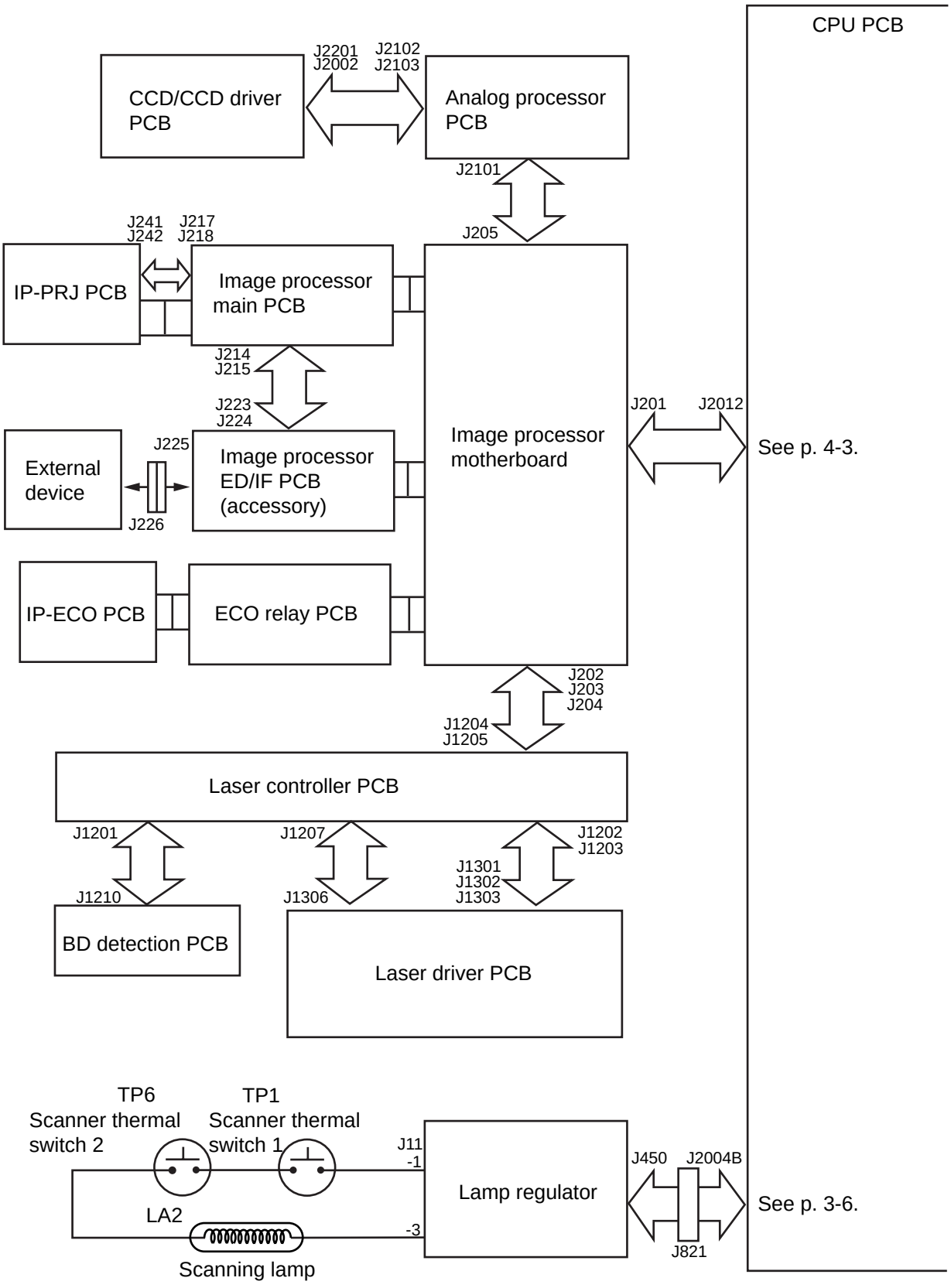

Figure 2-303

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Inputs to and Outputs from the CPU PCB (2/4)

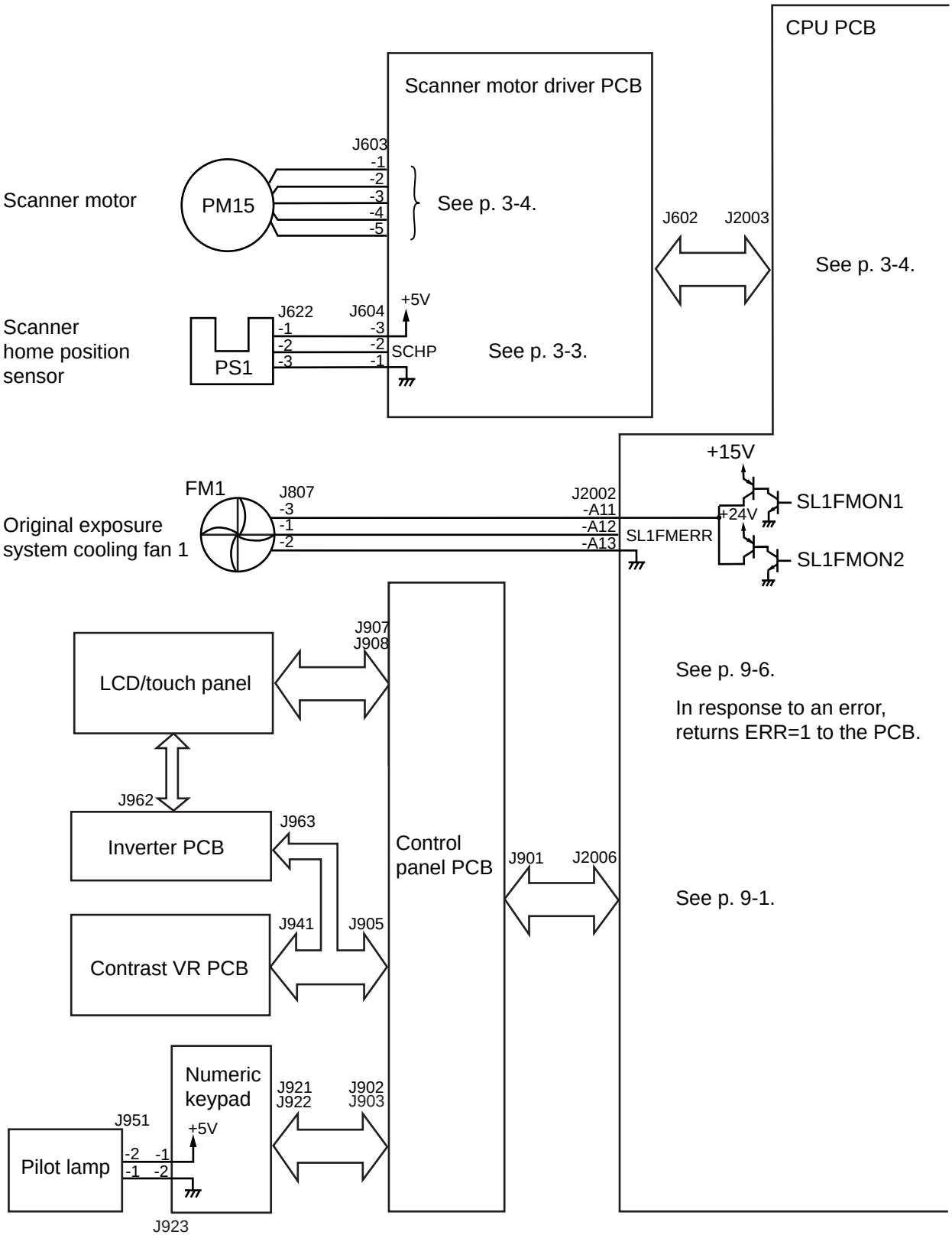

Figure 2-304

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Inputs to and Outputs from the CPU PCB (3/4)

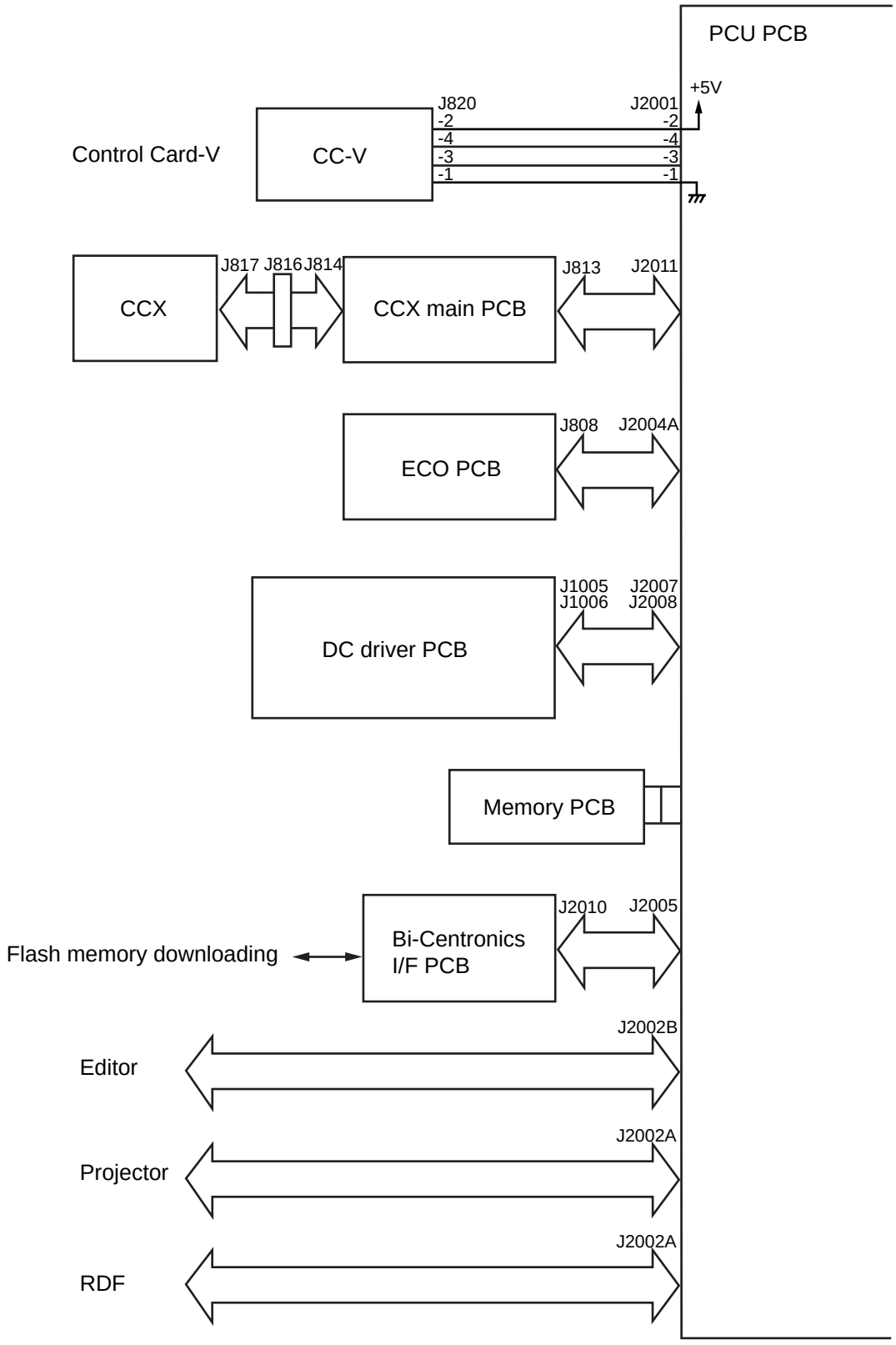

Figure 2-305

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Inputs to and Outputs from the CPU PCB (4/4)

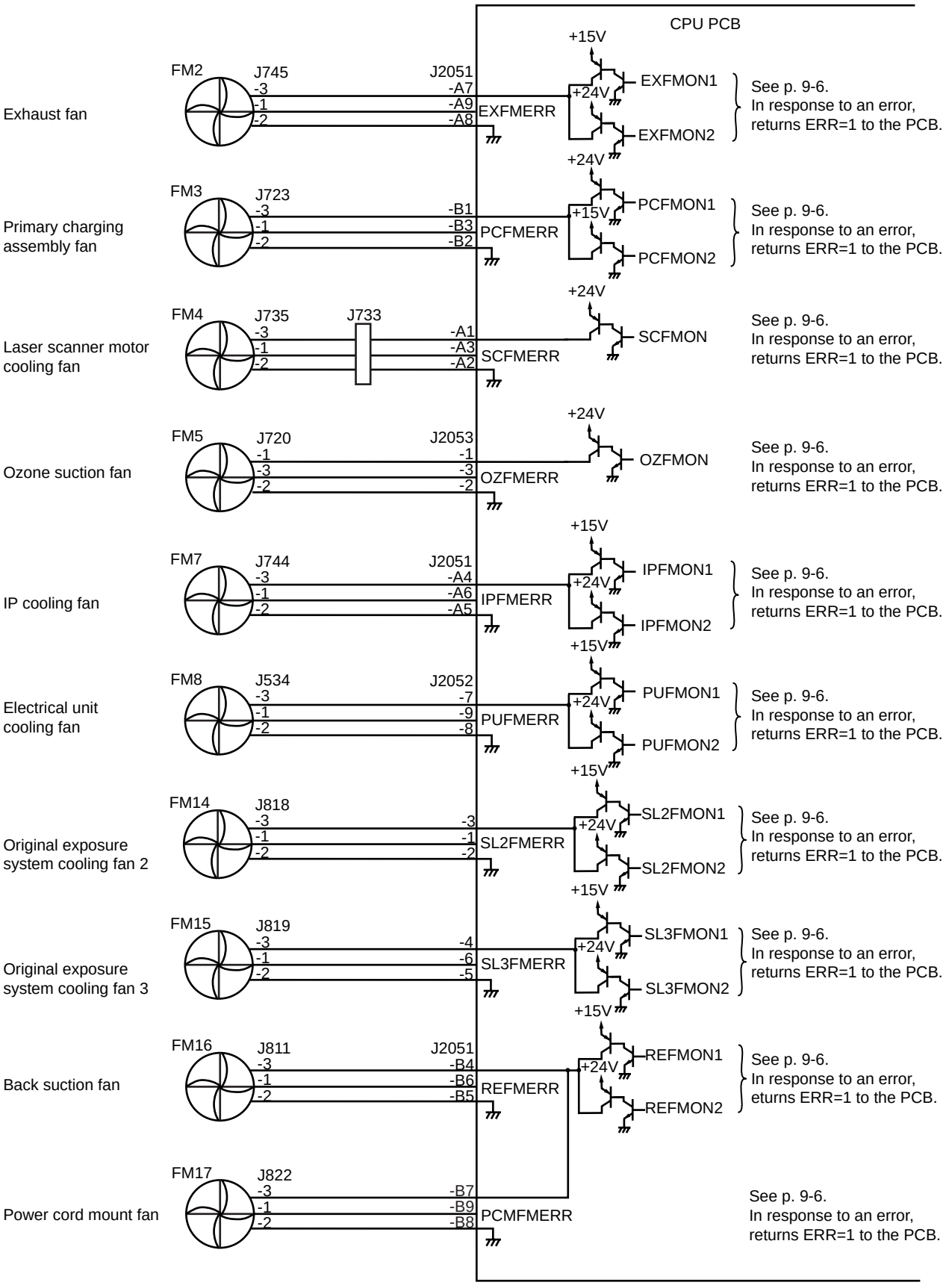

Figure 2-306

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Inputs to the DC Driver PCB (1/13)

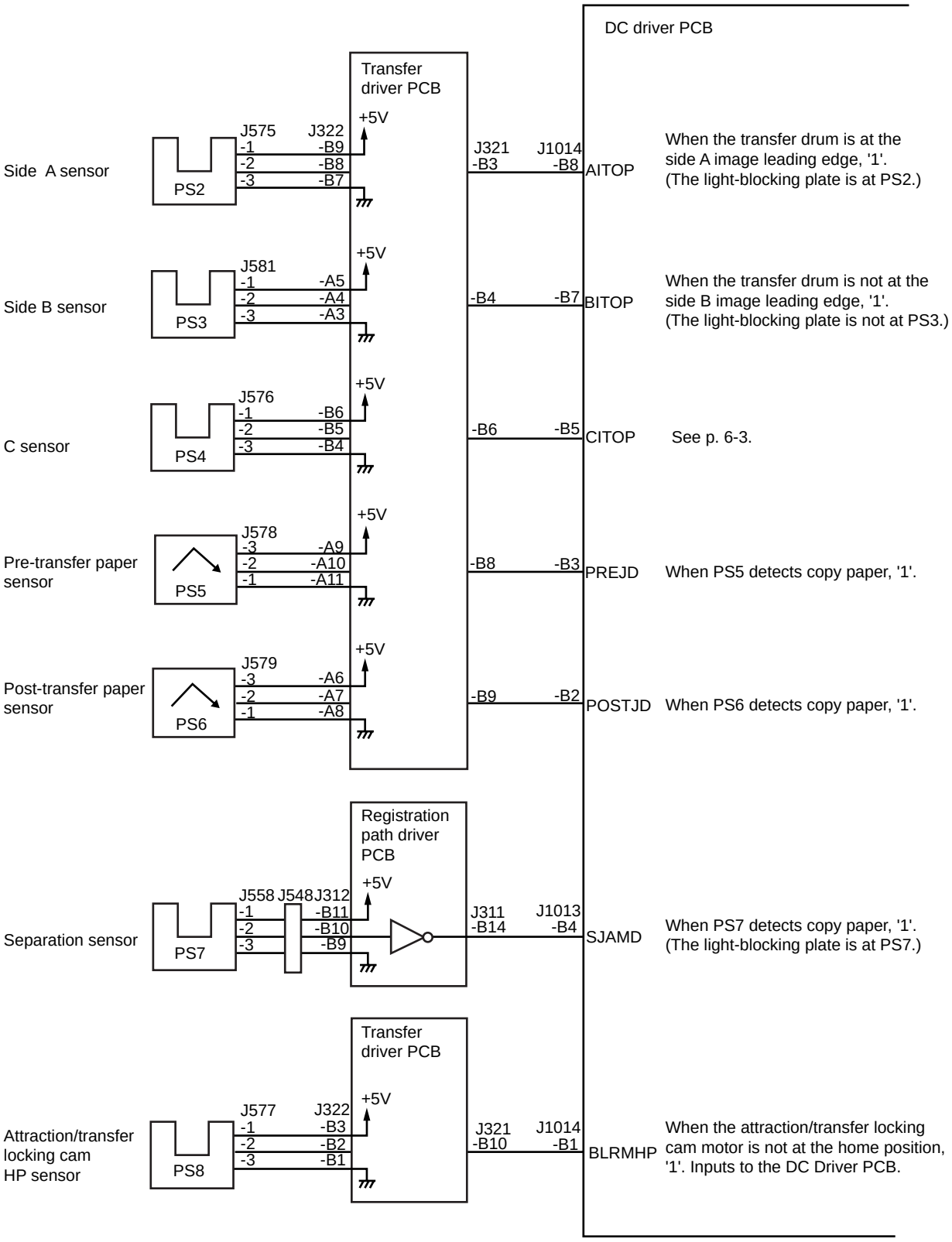

Figure 2-307

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Inputs to the DC Driver PCB (2/13)

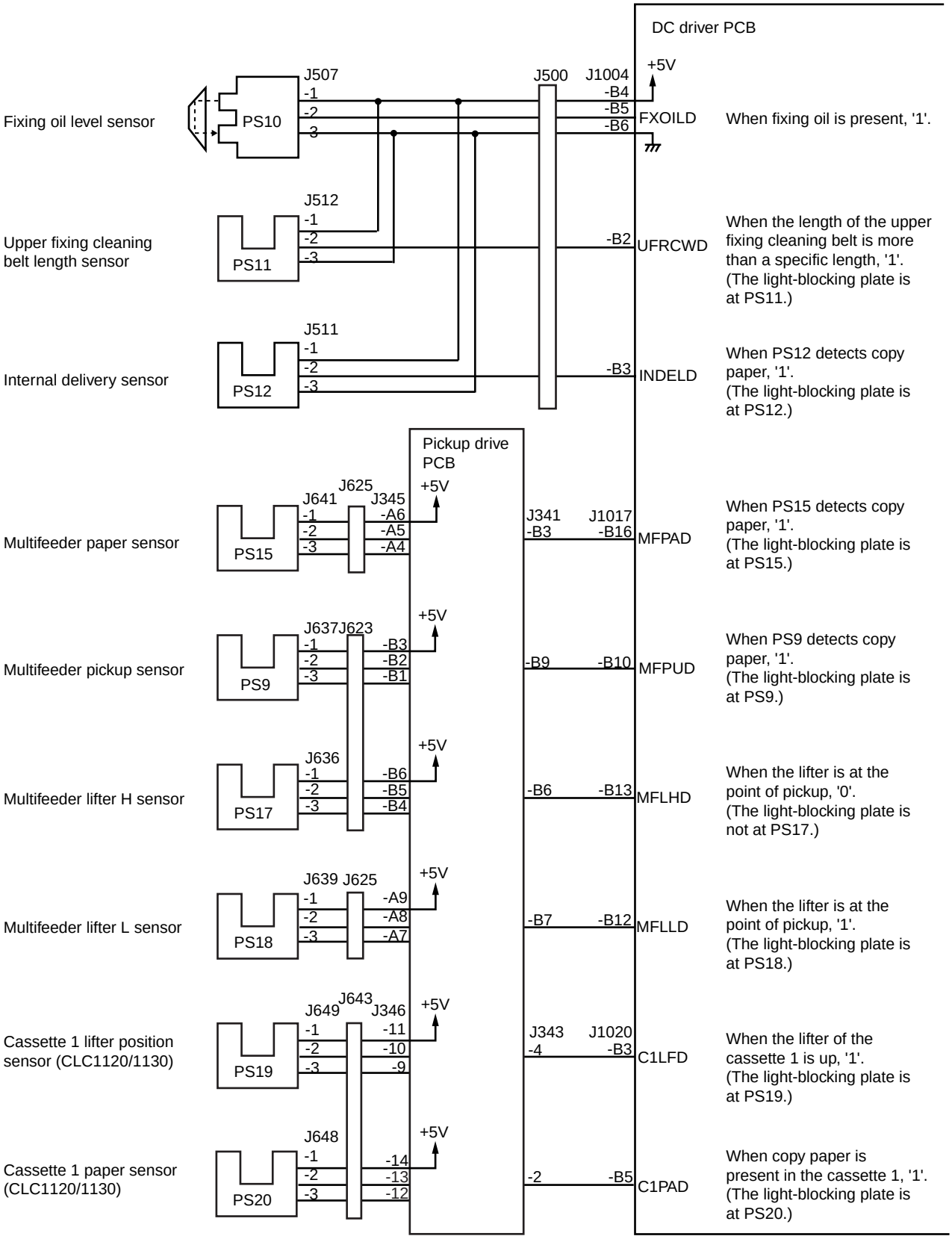

Figure 2-308

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Inputs to the DC Driver PCB (3/13)
· CLC1120/1130

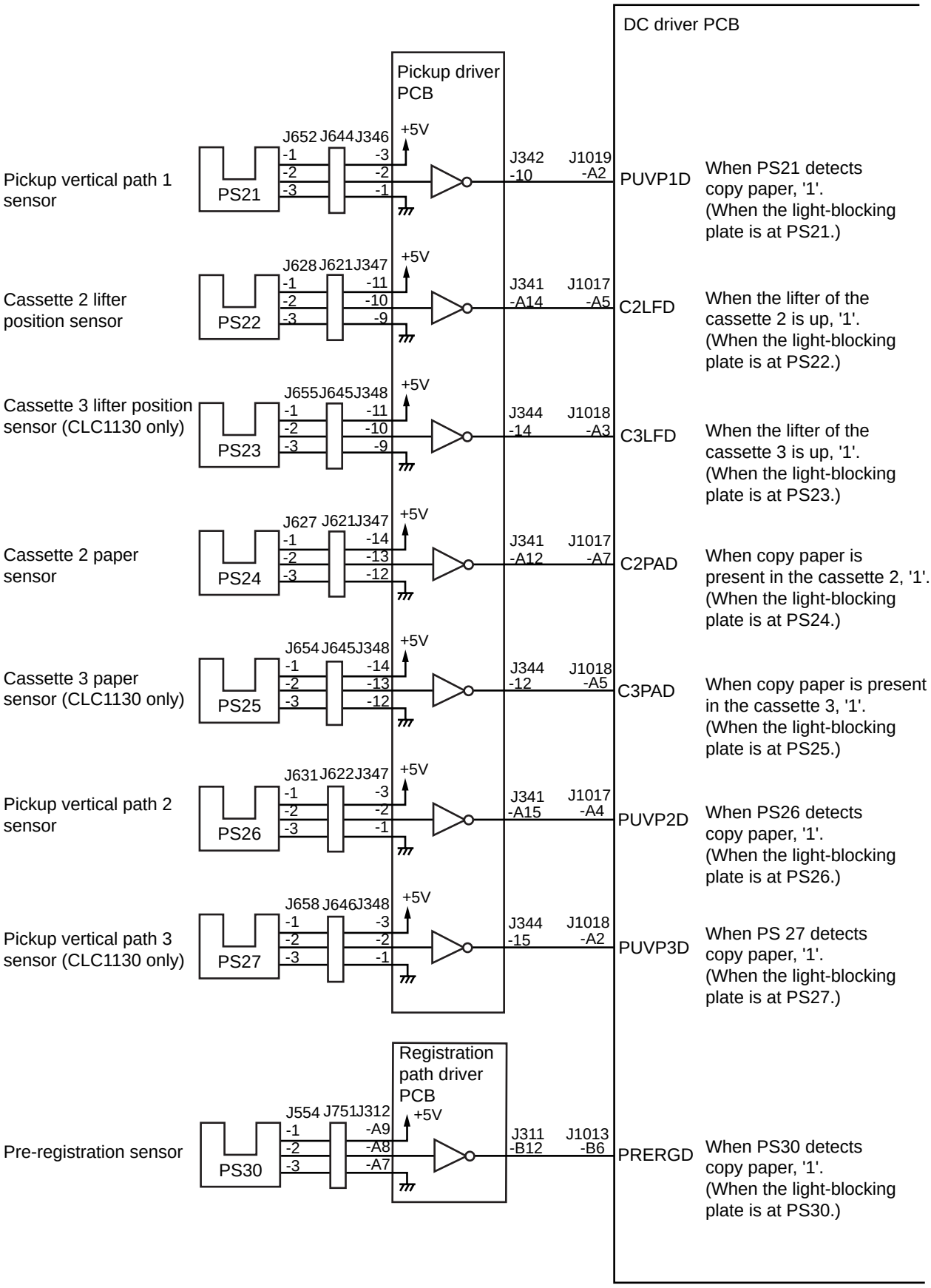
DC driver PCB
Pickup driver PCB
Registration path driver PCB
+5V
Pickup vertical path 1 sensor
PS21
J652 J644 J346
J342 -10
J1019 -A2
PUVP1D
When PS21 detects copy paper, '1'. (When the light-blocking plate is at PS21.)
Cassette 2 lifter position sensor
PS22
J628 J621 J347
J341 -A14
J1017 -A5
C2LFD
When the lifter of the cassette 2 is up, '1'. (When the light-blocking plate is at PS22.)
Cassette 3 lifter position sensor (CLC1130 only)
PS23
J655 J645 J348
J344 -14
J1018 -A3
C3LFD
When the lifter of the cassette 3 is up, '1'. (When the light-blocking plate is at PS23.)
Cassette 2 paper sensor
PS24
J627 J621 J347
J341 -A12
J1017 -A7
C2PAD
When copy paper is present in the cassette 2, '1'. (When the light-blocking plate is at PS24.)
Cassette 3 paper sensor (CLC1130 only)
PS25
J654 J645 J348
J344 -12
J1018 -A5
C3PAD
When copy paper is present in the cassette 3, '1'. (When the light-blocking plate is at PS25.)
Pickup vertical path 2 sensor
PS26
J631 J622 J347
J341 -A15
J1017 -A4
PUVP2D
When PS26 detects copy paper, '1'. (When the light-blocking plate is at PS26.)
Pickup vertical path 3 sensor (CLC1130 only)
PS27
J658 J646 J348
J344 -15
J1018 -A2
PUVP3D
When PS 27 detects copy paper, '1'. (When the light-blocking plate is at PS27.)
Pre-registration sensor
PS30
J554 J751 J312
J311 -B12
J1013 -B6
PRERGD
When PS30 detects copy paper, '1'. (When the light-blocking plate is at PS30.)

Figure 2-309

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Inputs to the DC Driver PCB (4/13)
(CLC1150 only)

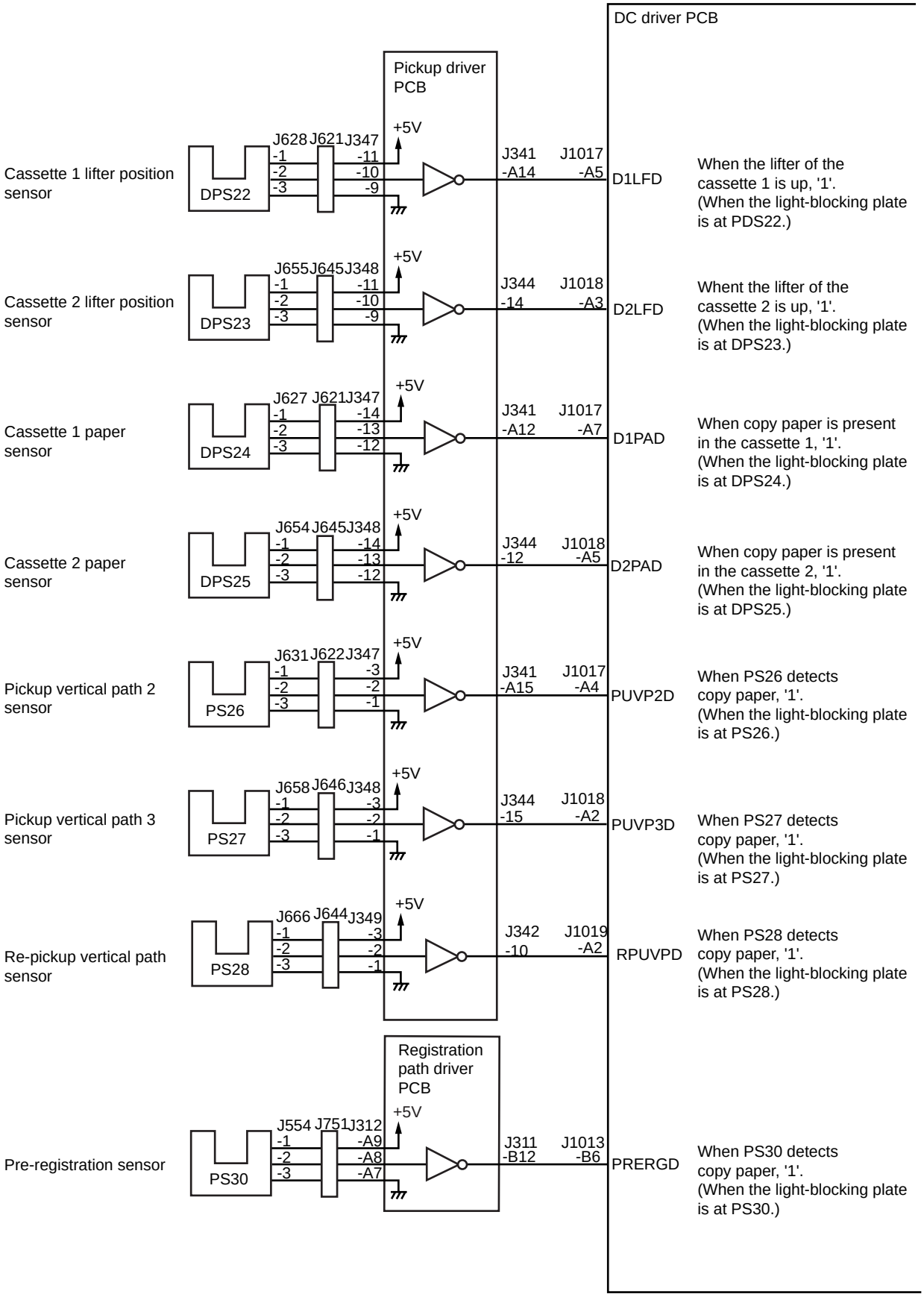
DC driver PCB
Pickup driver PCB
Registration path driver PCB
+5V
Cassette 1 lifter position sensor
DPS22
J628 J621 J347
-1 -2 -3 -11 -10 -9
J341 -A14
J1017 -A5
D1LFD
When the lifter of the cassette 1 is up, '1'. (When the light-blocking plate is at PDS22.)
Cassette 2 lifter position sensor
DPS23
J655 J645 J348
-1 -2 -3 -11 -10 -9
J344 -14
J1018 -A3
D2LFD
Whent the lifter of the cassette 2 is up, '1'. (When the light-blocking plate is at DPS23.)
Cassette 1 paper sensor
DPS24
J627 J621 J347
-1 -2 -3 -14 -13 -12
J341 -A12
J1017 -A7
D1PAD
When copy paper is present in the cassette 1, '1'. (When the light-blocking plate is at DPS24.)
Cassette 2 paper sensor
DPS25
J654 J645 J348
-1 -2 -3 -14 -13 -12
J344 -12
J1018 -A5
D2PAD
When copy paper is present in the cassette 2, '1'. (When the light-blocking plate is at DPS25.)
Pickup vertical path 2 sensor
PS26
J631 J622 J347
-1 -2 -3 -3 -2 -1
J341 -A15
J1017 -A4
PUVP2D
When PS26 detects copy paper, '1'. (When the light-blocking plate is at PS26.)
Pickup vertical path 3 sensor
PS27
J658 J646 J348
-1 -2 -3 -3 -2 -1
J344 -15
J1018 -A2
PUVP3D
When PS27 detects copy paper, '1'. (When the light-blocking plate is at PS27.)
Re-pickup vertical path sensor
PS28
J666 J644 J349
-1 -2 -3 -3 -2 -1
J342 -10
J1019 -A2
RPUVPD
When PS28 detects copy paper, '1'. (When the light-blocking plate is at PS28.)
Pre-registration sensor
PS30
J554 J751 J312
-1 -2 -3 -A9 -A8 -A7
J311 -B12
J1013 -B6
PRERGD
When PS30 detects copy paper, '1'. (When the light-blocking plate is at PS30.)

Figure 2-310

Inputs to the DC Driver PCB (5/13)
(CLC1150 only)

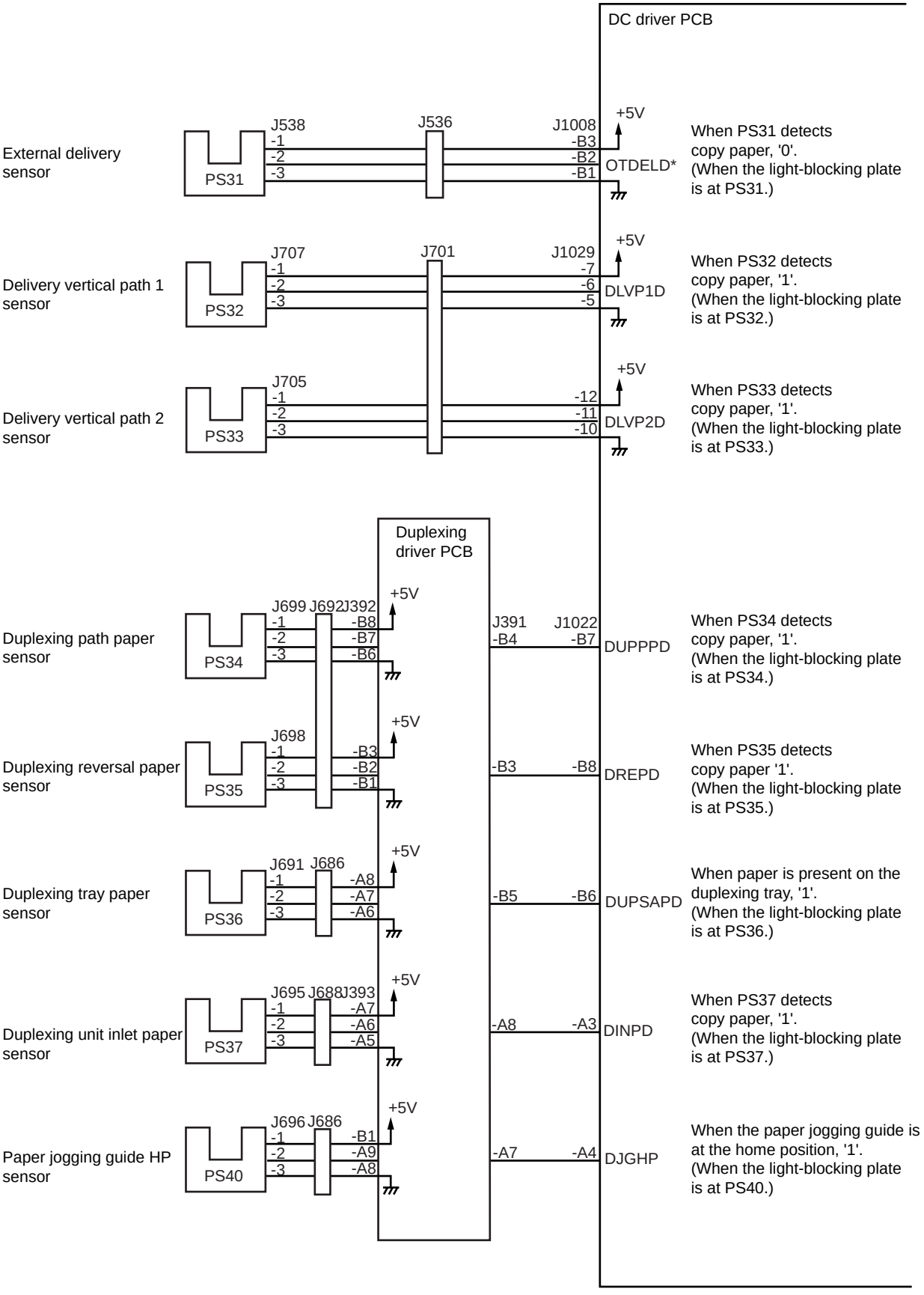

Figure 2-311

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Inputs to the DC Driver PCB (6/13)
(CLC1120/1130)

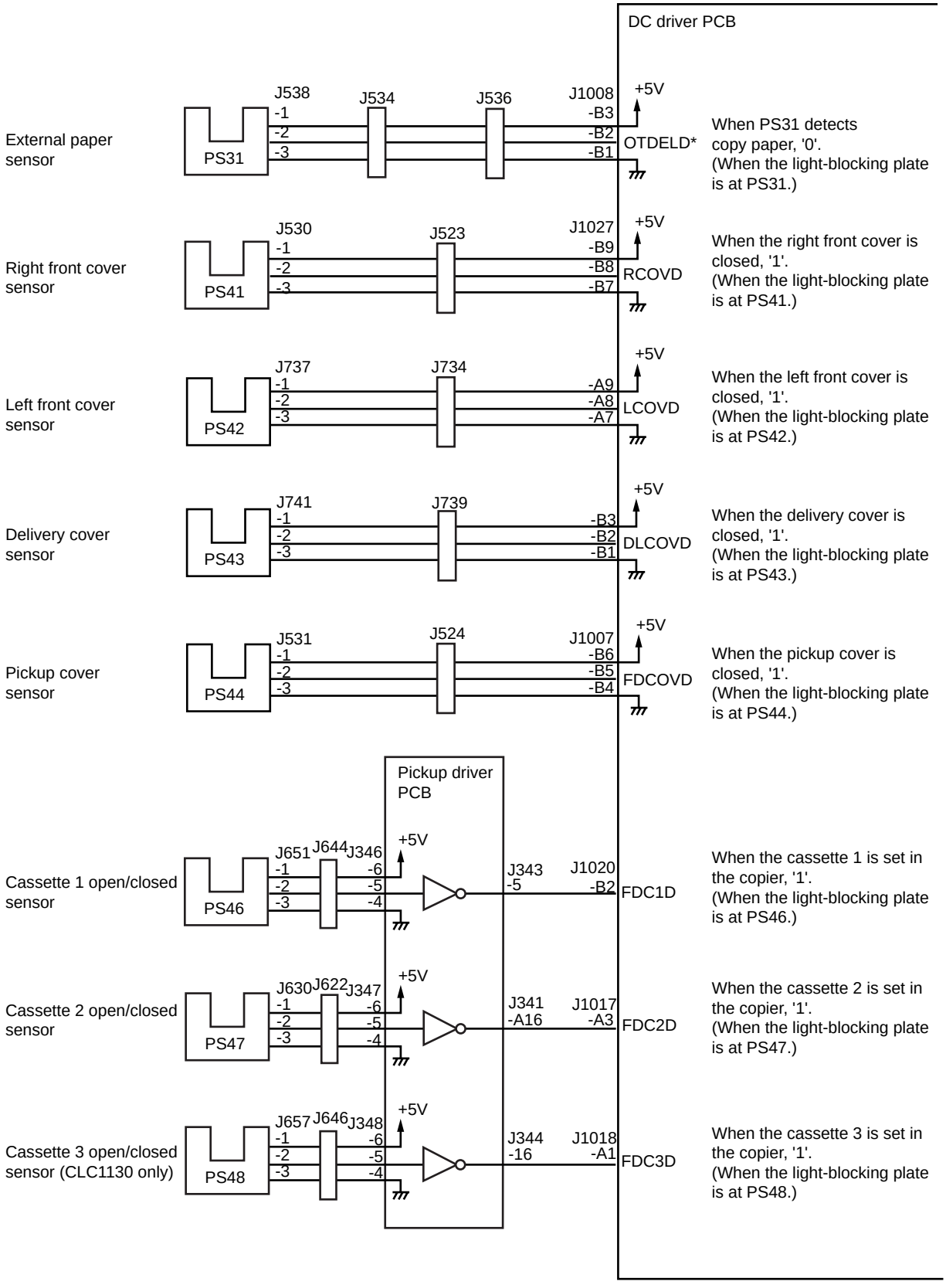

Figure 2-312

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Inputs to the DC Driver PCB (7/13)
(CLC1150 only)

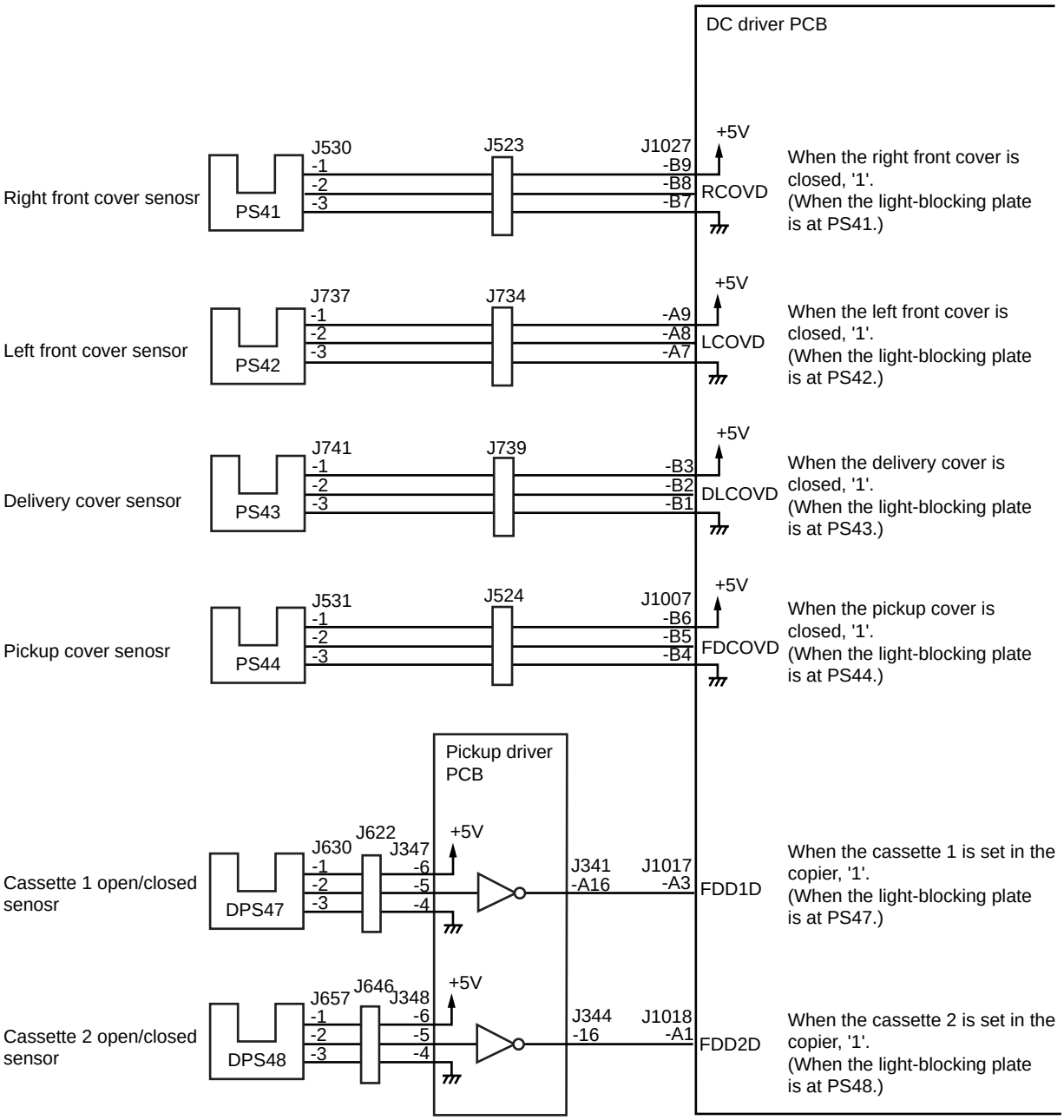

Figure 2-313

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Inputs to the DC Drive PCB (8/13)

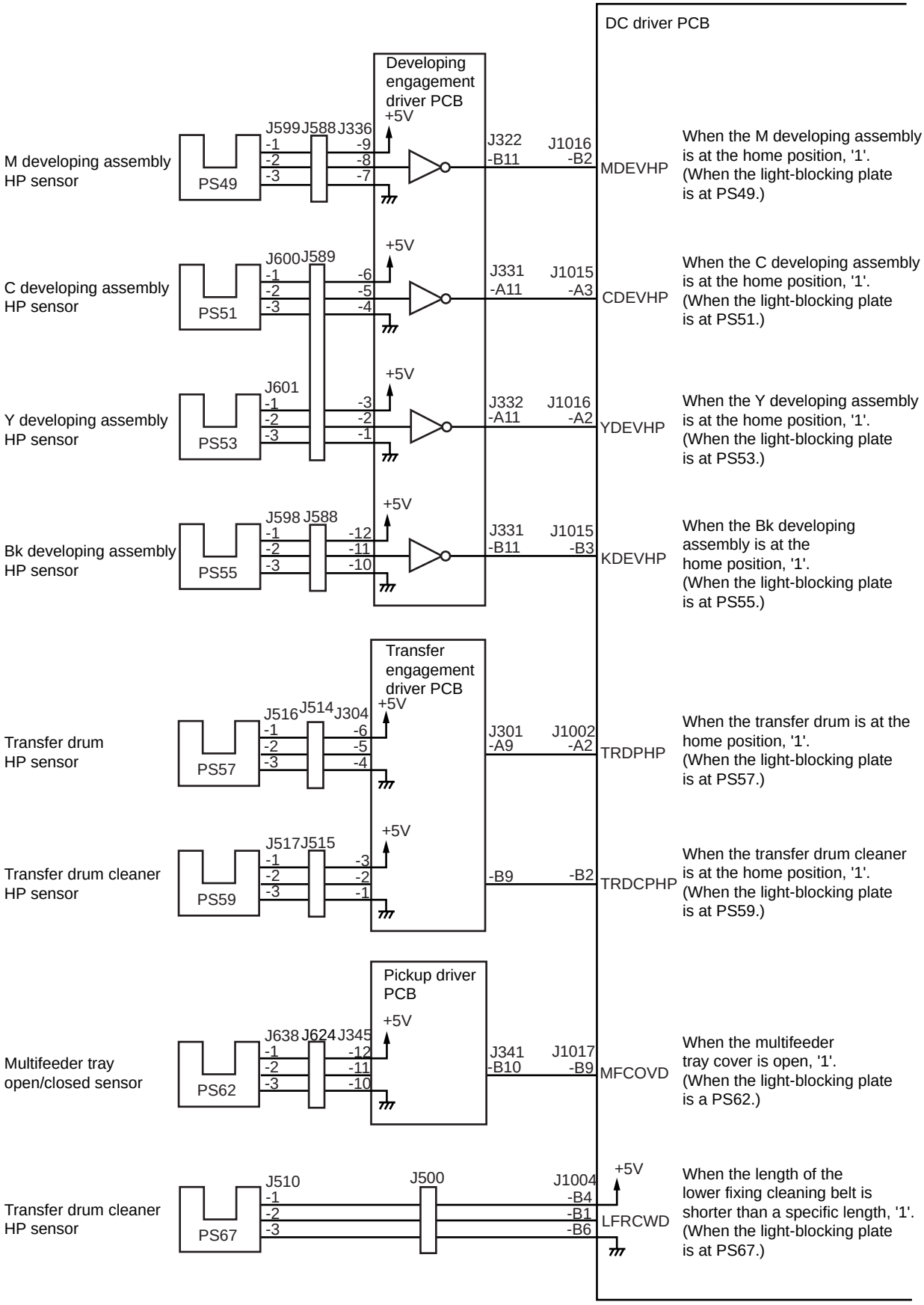
DC driver PCB
Developing engagement driver PCB
M developing assembly HP sensor
PS49
J599 J588 J336
J322 -B11
J1016 -B2
MDEVHP
When the M developing assembly is at the home position, '1'. (When the light-blocking plate is at PS49.)
C developing assembly HP sensor
PS51
J600 J589
J331 -A11
J1015 -A3
CDEVHP
When the C developing assembly is at the home position, '1'. (When the light-blocking plate is at PS51.)
Y developing assembly HP sensor
PS53
J601
J332 -A11
J1016 -A2
YDEVHP
When the Y developing assembly is at the home position, '1'. (When the light-blocking plate is at PS53.)
Bk developing assembly HP sensor
PS55
J598 J588
J331 -B11
J1015 -B3
KDEVHP
When the Bk developing assembly is at the home position, '1'. (When the light-blocking plate is at PS55.)
Transfer engagement driver PCB
Transfer drum HP sensor
PS57
J516 J514 J304
J301 -A9
J1002 -A2
TRDPHP
When the transfer drum is at the home position, '1'. (When the light-blocking plate is at PS57.)
Transfer drum cleaner HP sensor
PS59
J517 J515
-B9
-B2
TRDCPHP
When the transfer drum cleaner is at the home position, '1'. (When the light-blocking plate is at PS59.)
Pickup driver PCB
Multifeeder tray open/closed sensor
PS62
J638 J624 J345
J341 -B10
J1017 -B9
MFCOVD
When the multifeeder tray cover is open, '1'. (When the light-blocking plate is a PS62.)
Transfer drum cleaner HP sensor
PS67
J510
J500
J1004 -B4
-B1
-B6
LFRCWD
+5V
When the length of the lower fixing cleaning belt is shorter than a specific length, '1'. (When the light-blocking plate is at PS67.)

Figure 2-314

Inputs to the DC Driver PCB (9/13)

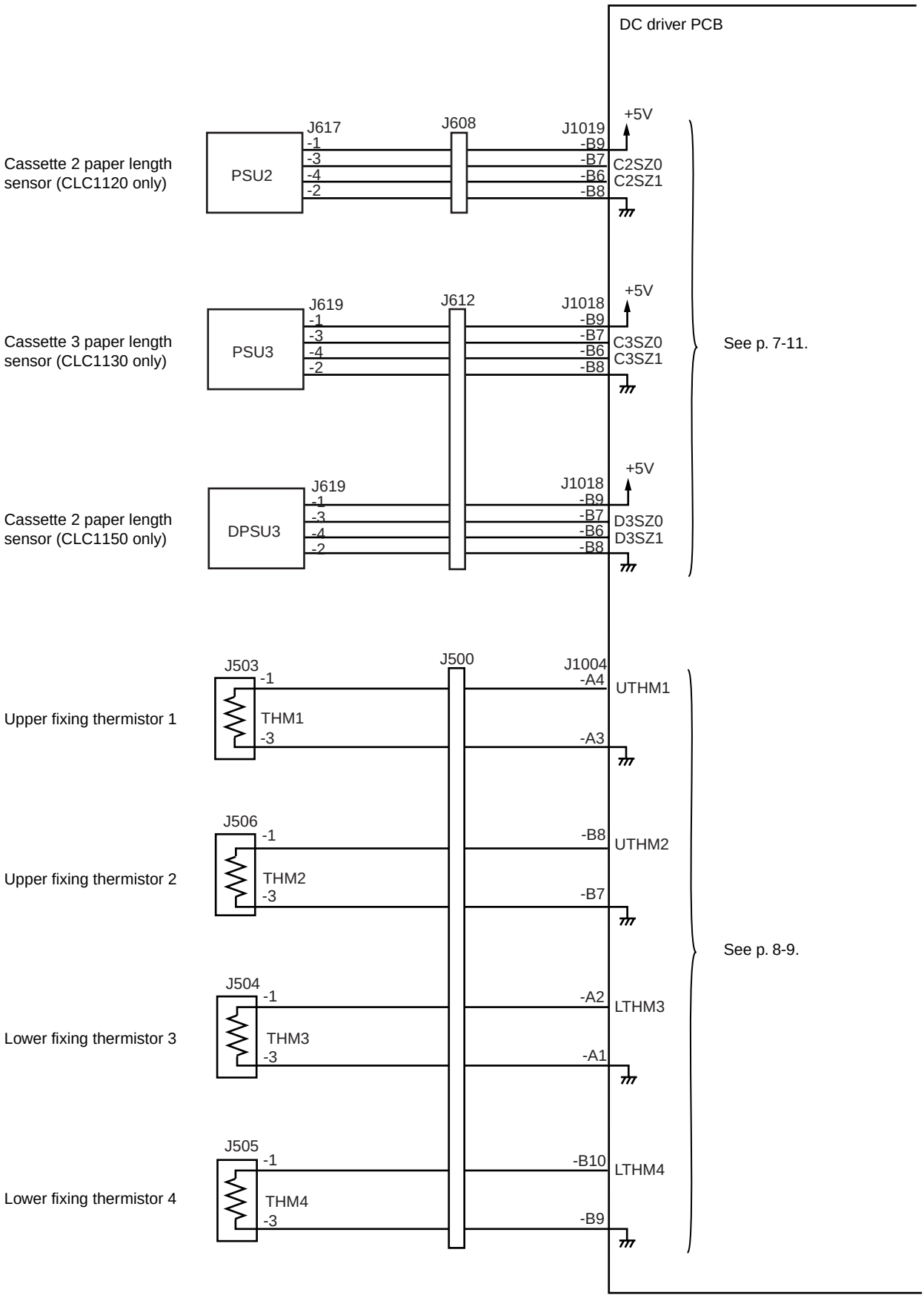

Figure 2-315

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Inputs to the DC Driver PCB (10/13)
(CLC1120/1130)

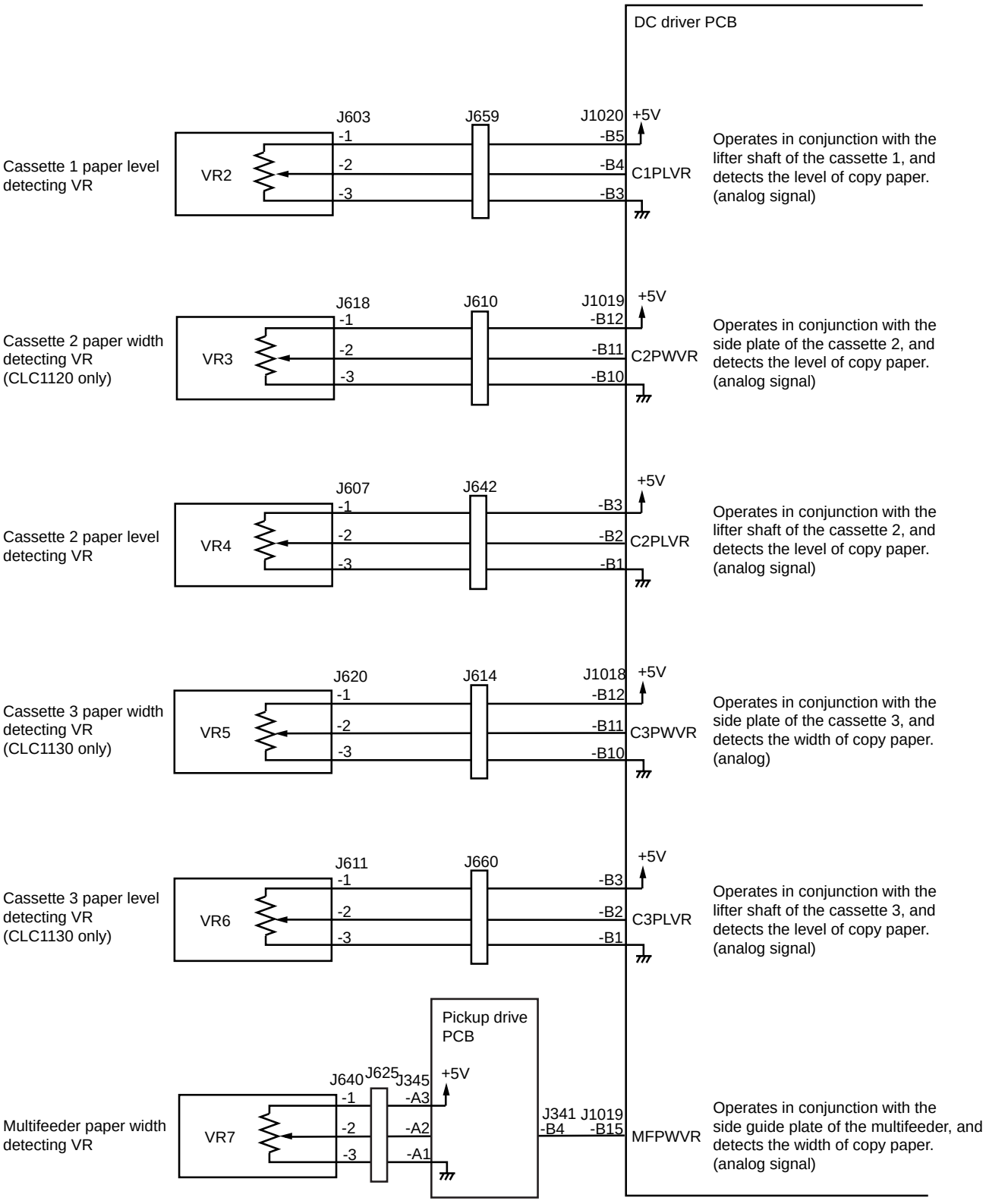

Figure 2-316

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Inputs to the DC Driver PCB (11/13)
(CLC1150 only)

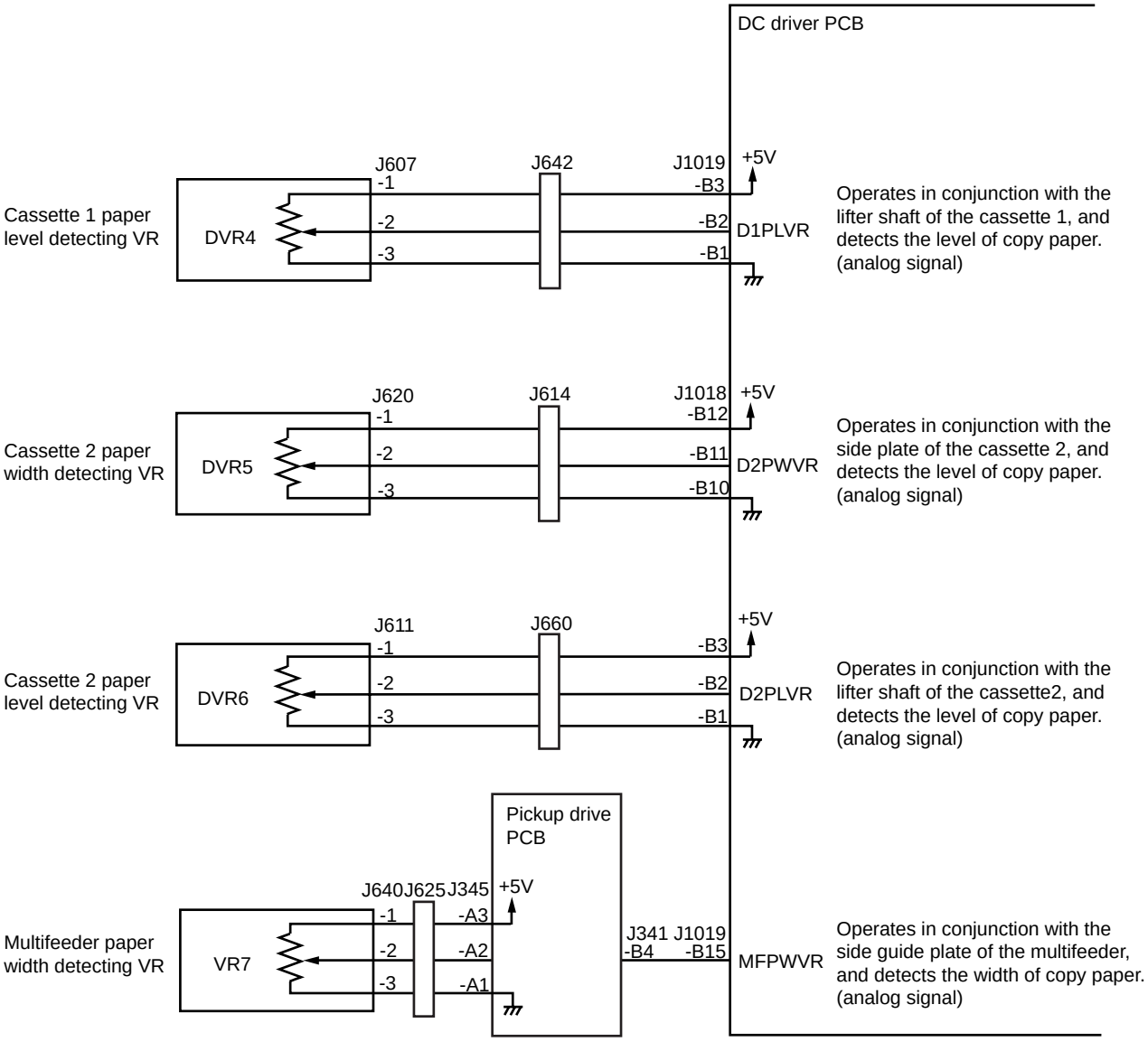

Figure 2-317

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Inputs to the DC Driver PCB (12/13)

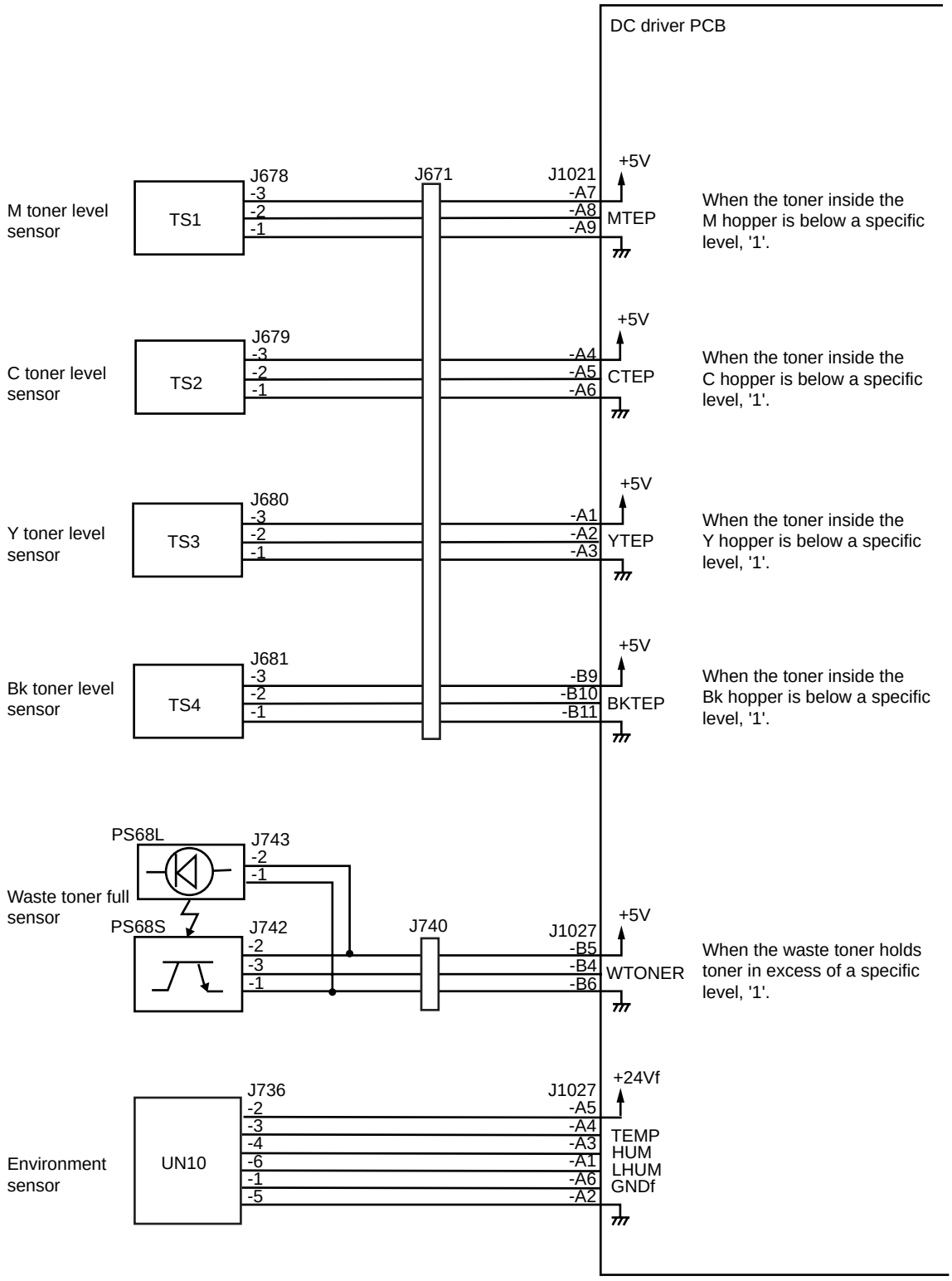

Figure 2-318

Inputs to the DC Driver PCB (13/13)

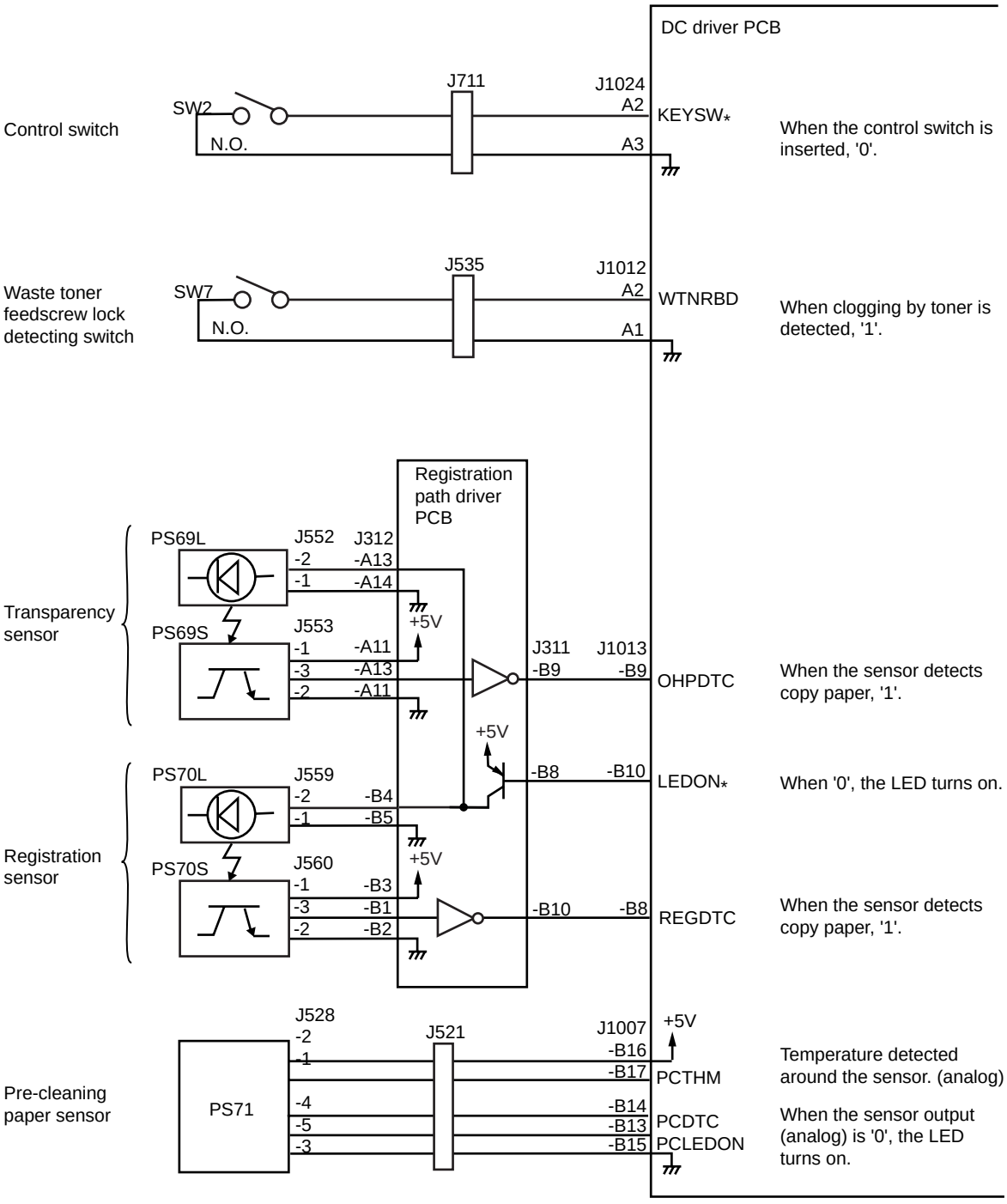

Figure 2-319

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Outputs from the DC Driver (1/15)

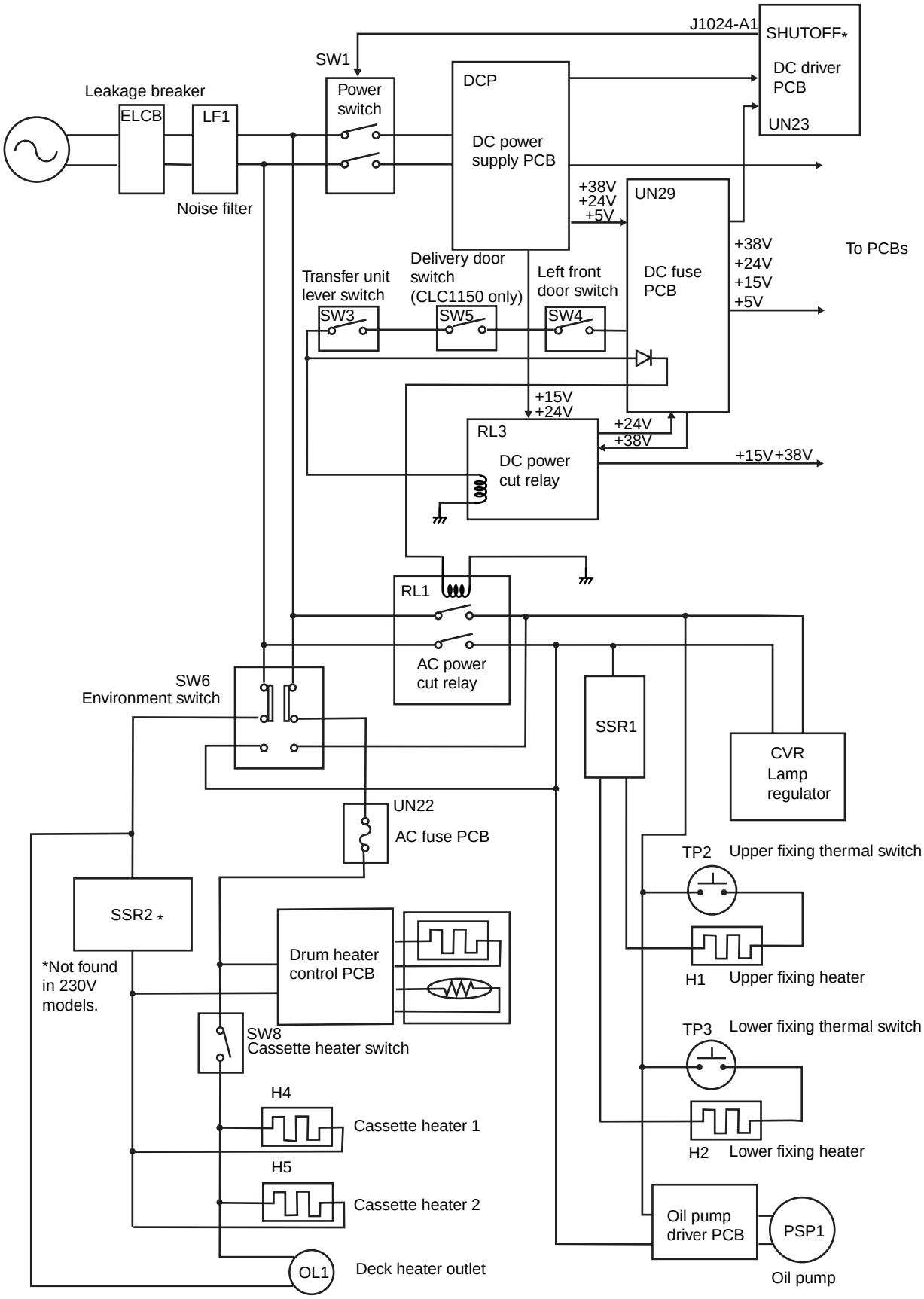

Figure 3-320

Output from the DC Driver PCB (2/15)

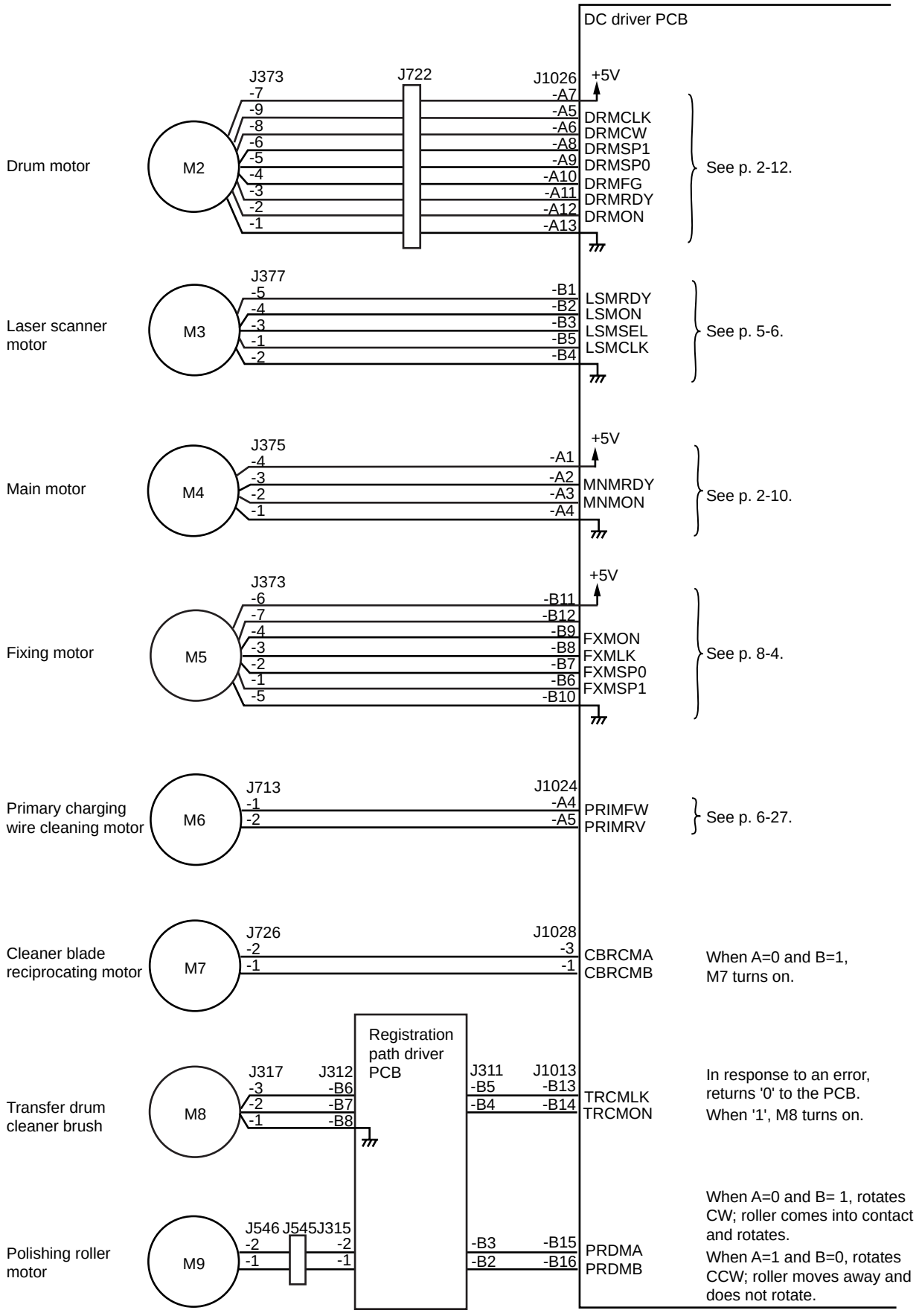

Figure 2-321

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Outputs from the DC Driver PCB (3/15)
(CLC1120/1130)

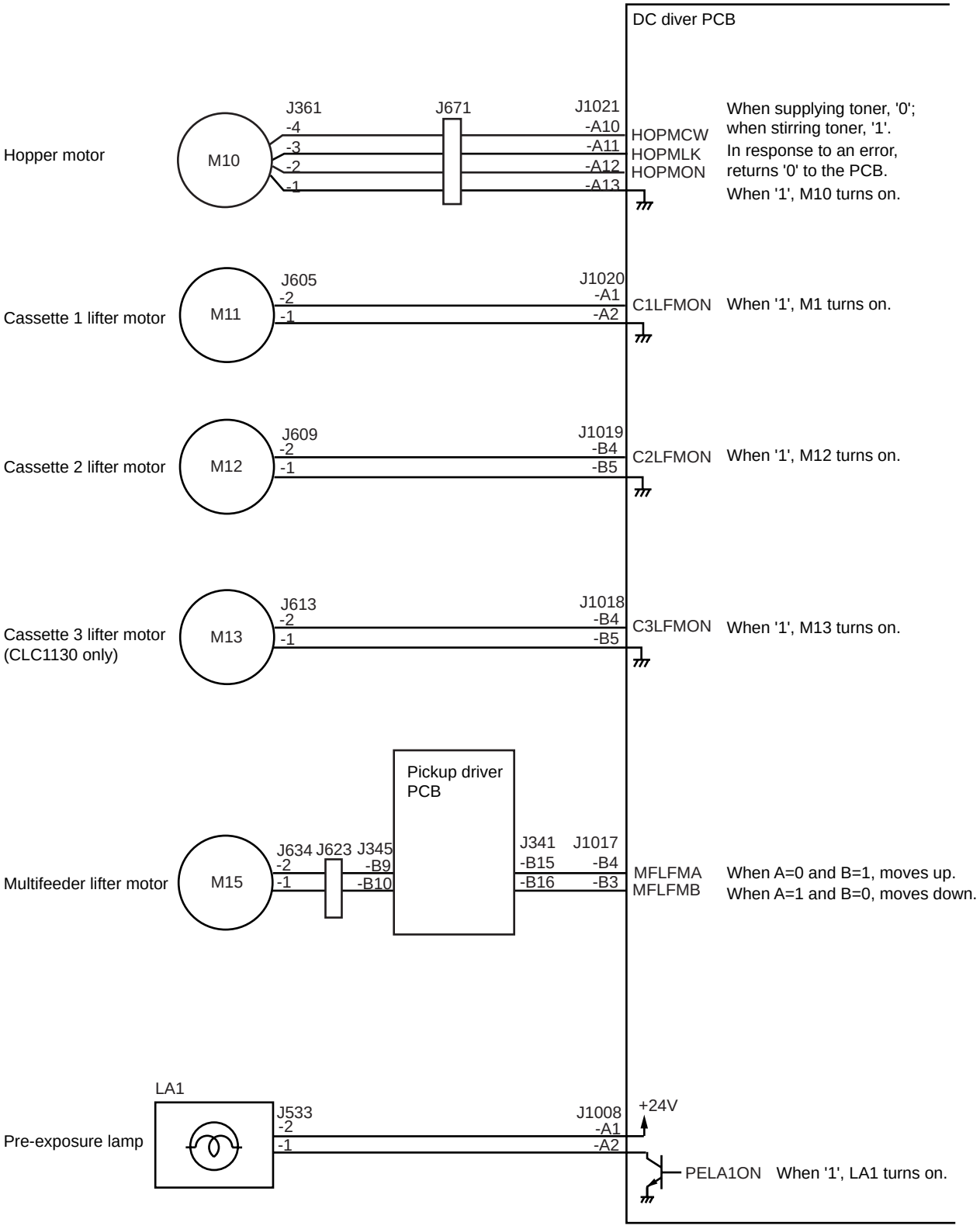

Figure 2-322

Outputs from the DC Driver PCB (4/15)
(CLC1150 only)

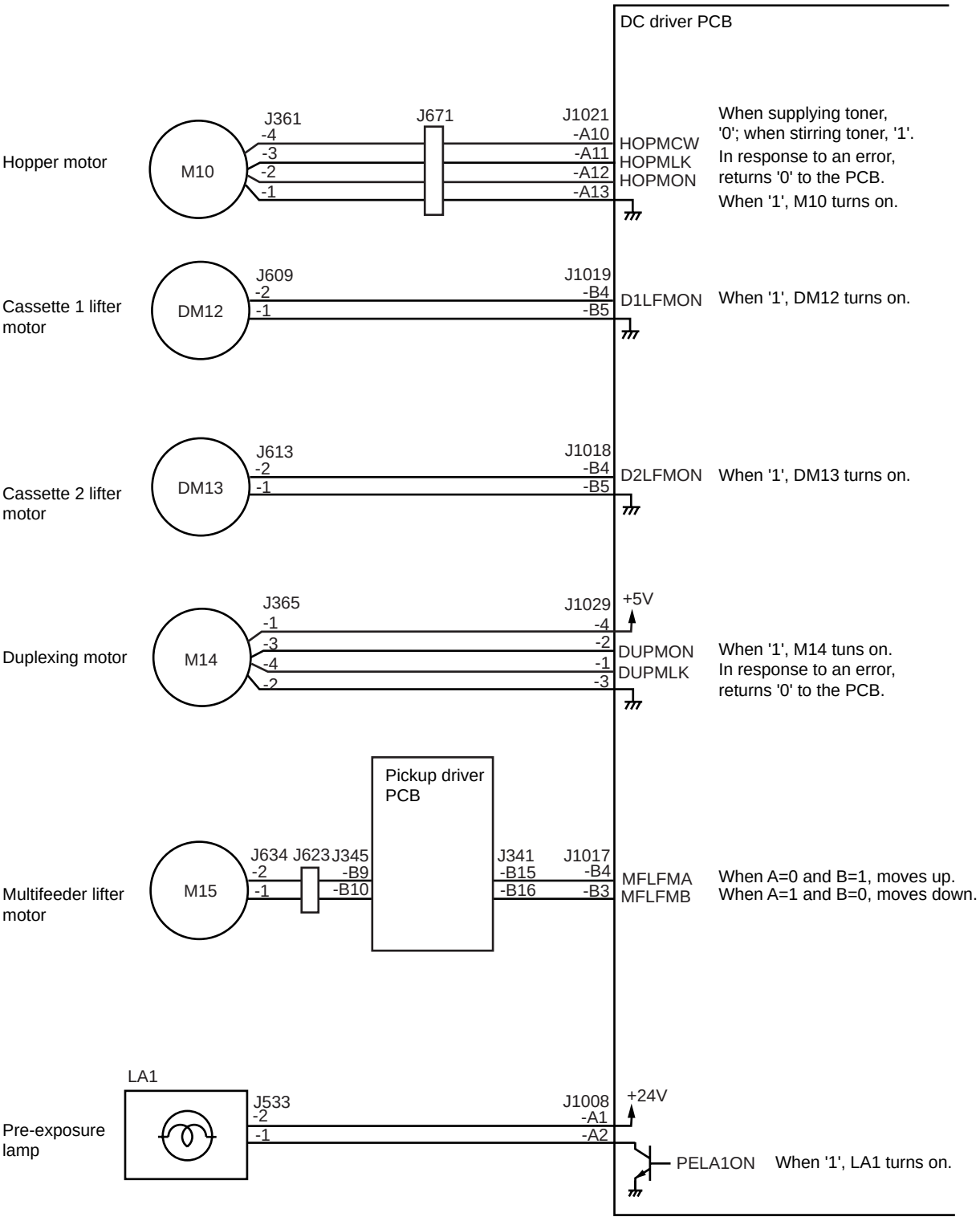

Figure 2-323

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Outputs from the DC Driver PCB (5/15)

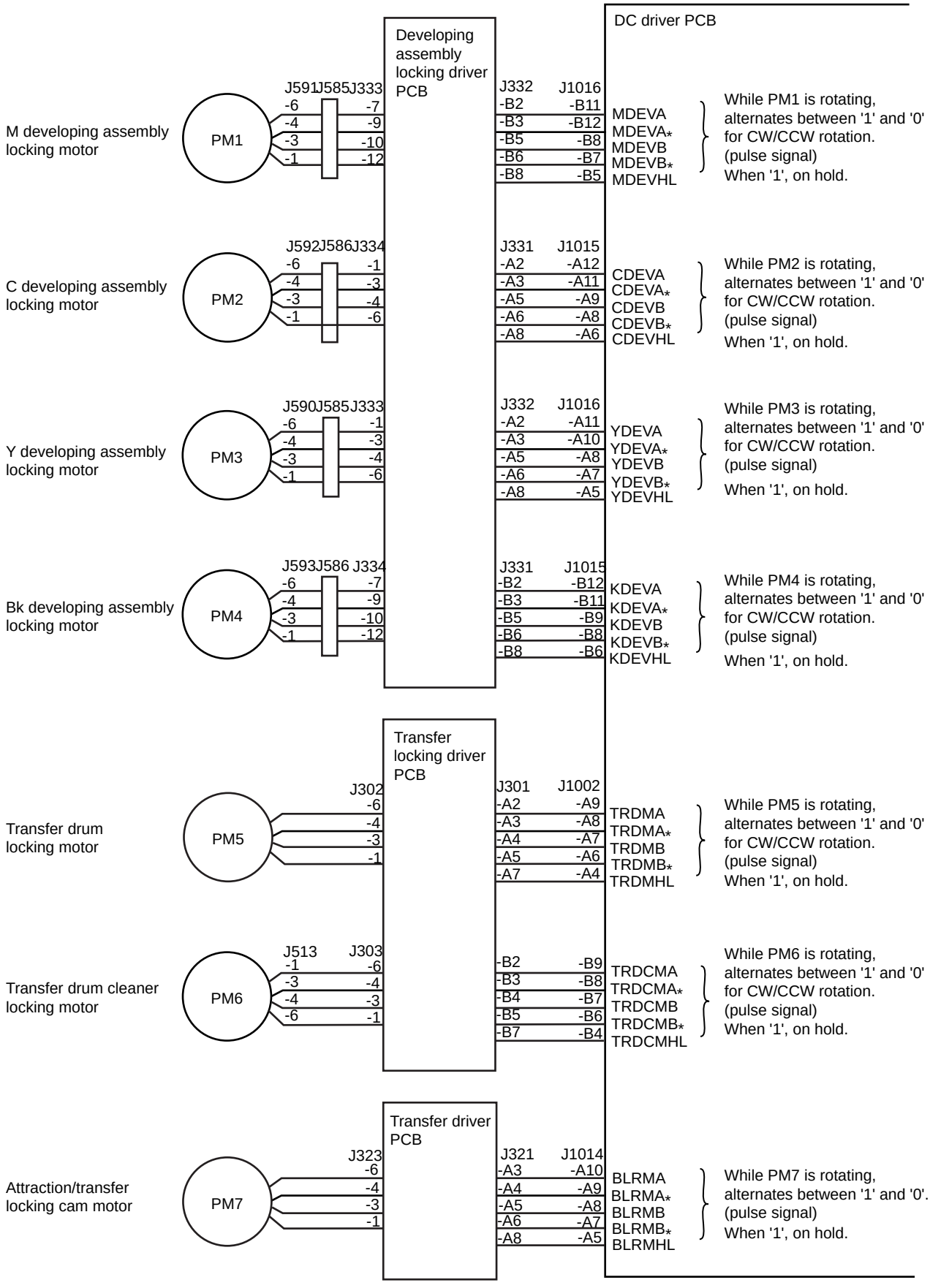

Figure 2-324

Outputs from the DC Driver PCB (6/15)
(CLC1120/1130)

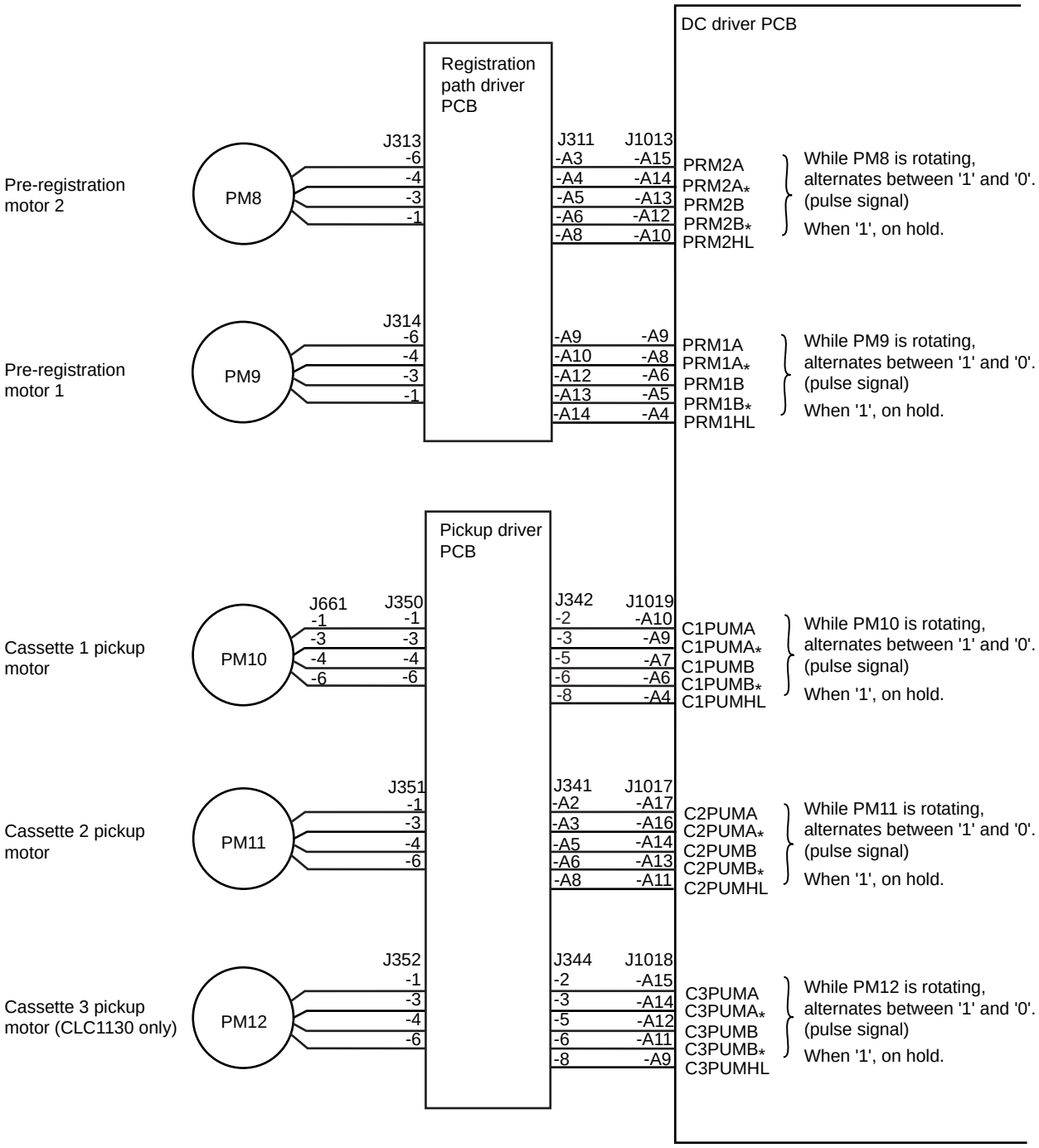

Figure 2-325

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Outputs from the DC Driver PCB (7/15)
(CLC1150 only)

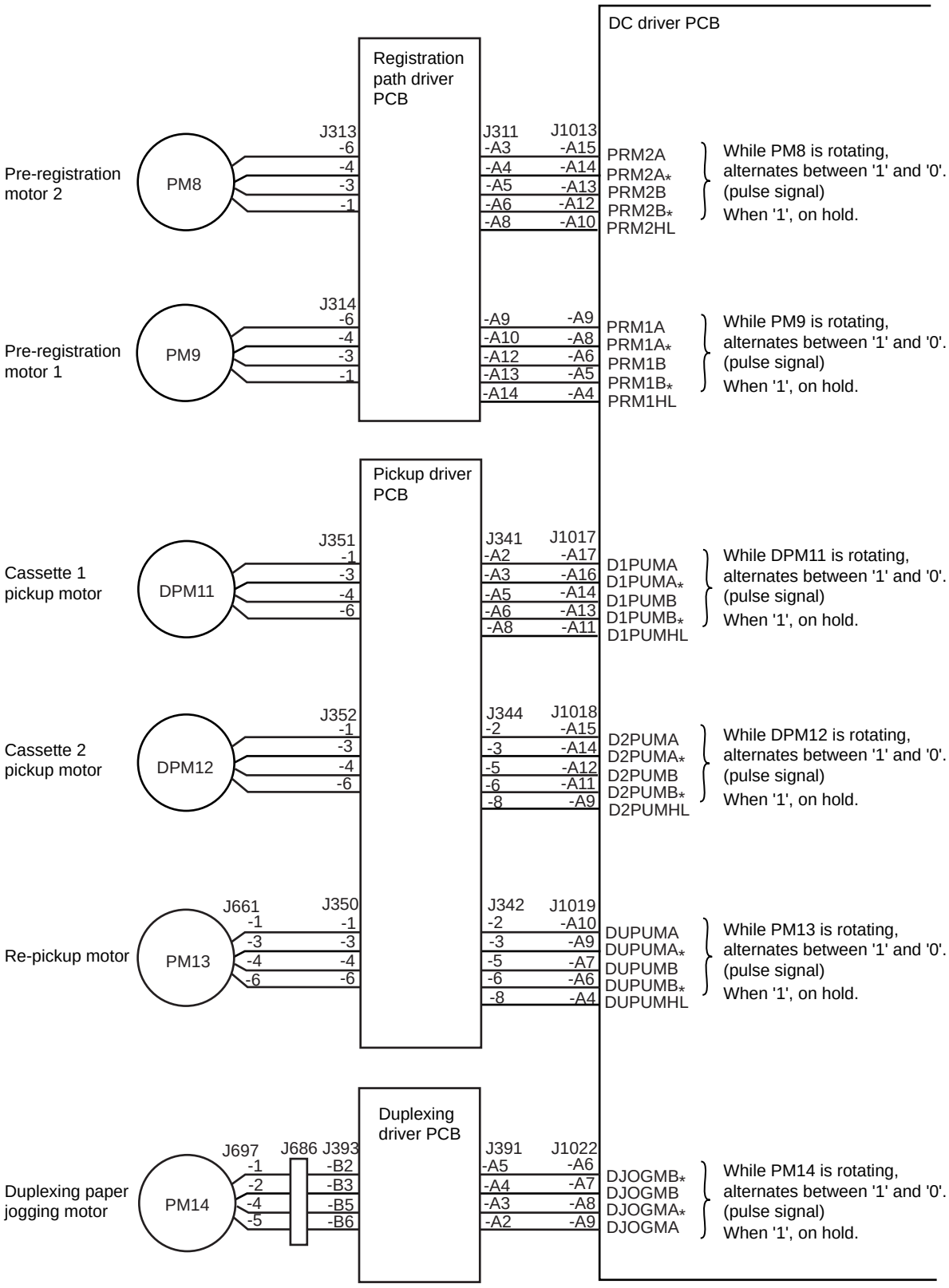

Figure 2-326

Outputs from the DC Driver PCB (8/15)

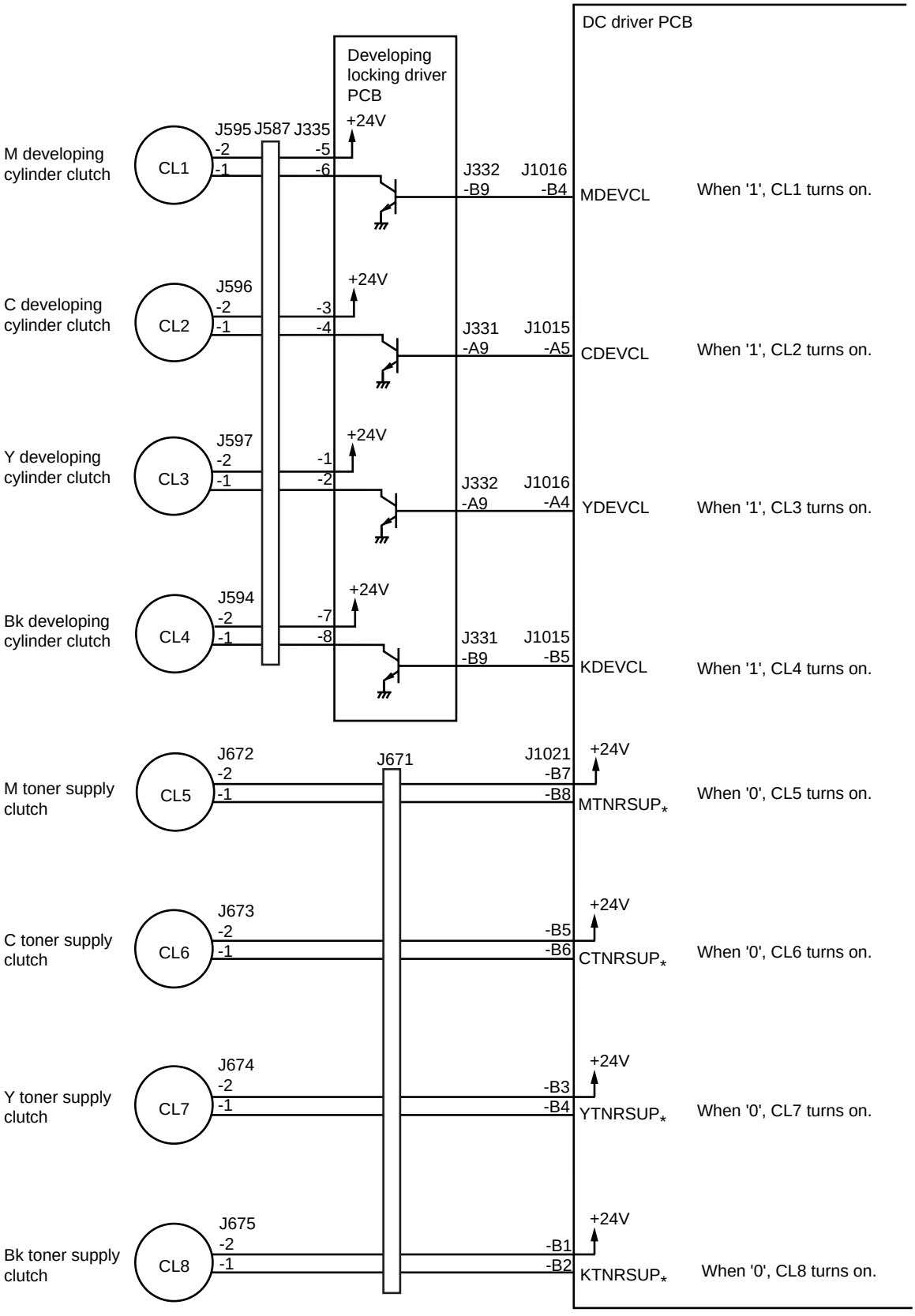

Figure 2-327

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Outputs from the DC Driver PCB (9/15)
(CLC1120/1130)

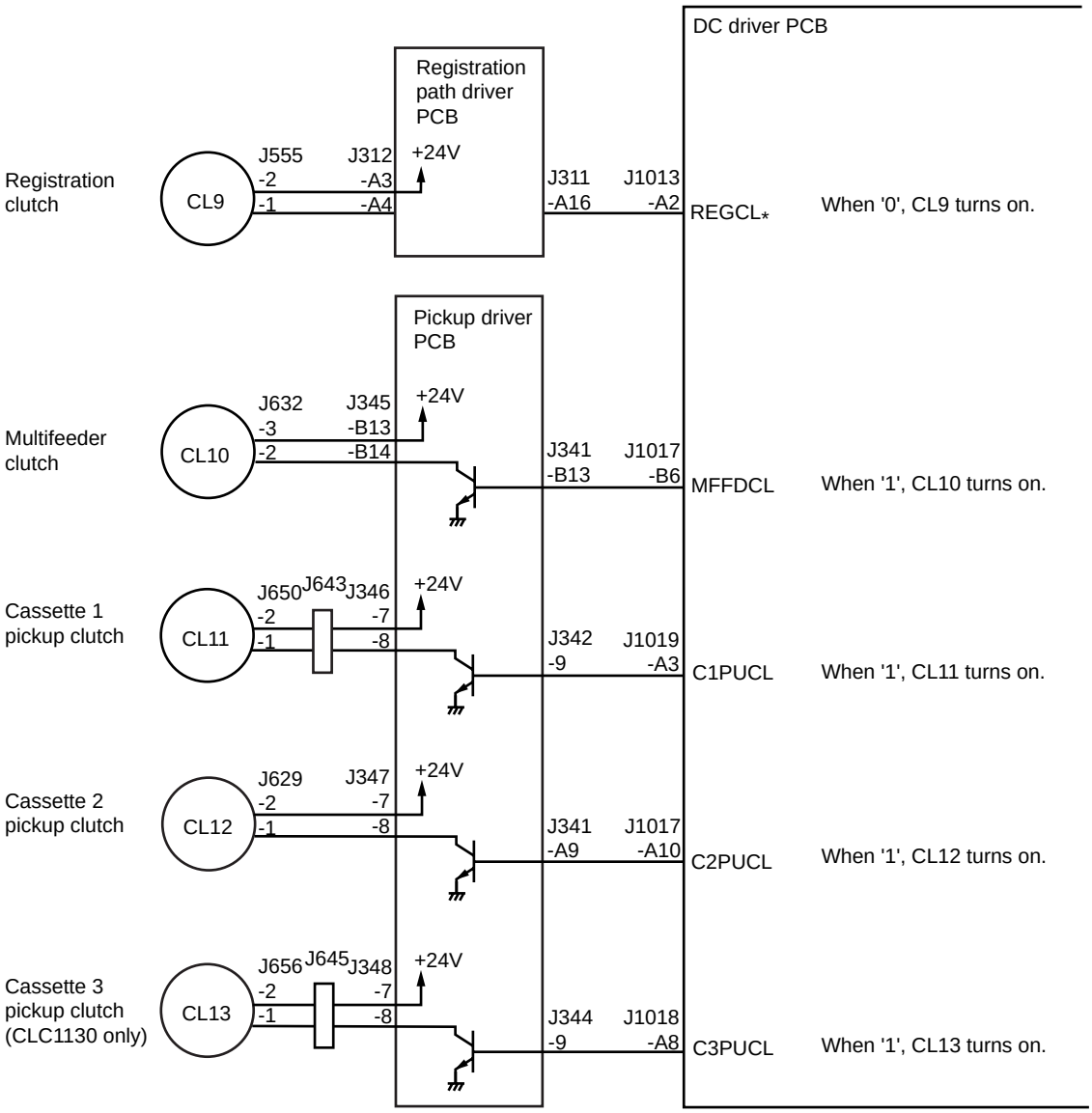

Figure 2-328

Outputs from the DC Driver PCB (10/15)
(CLC1150 only)

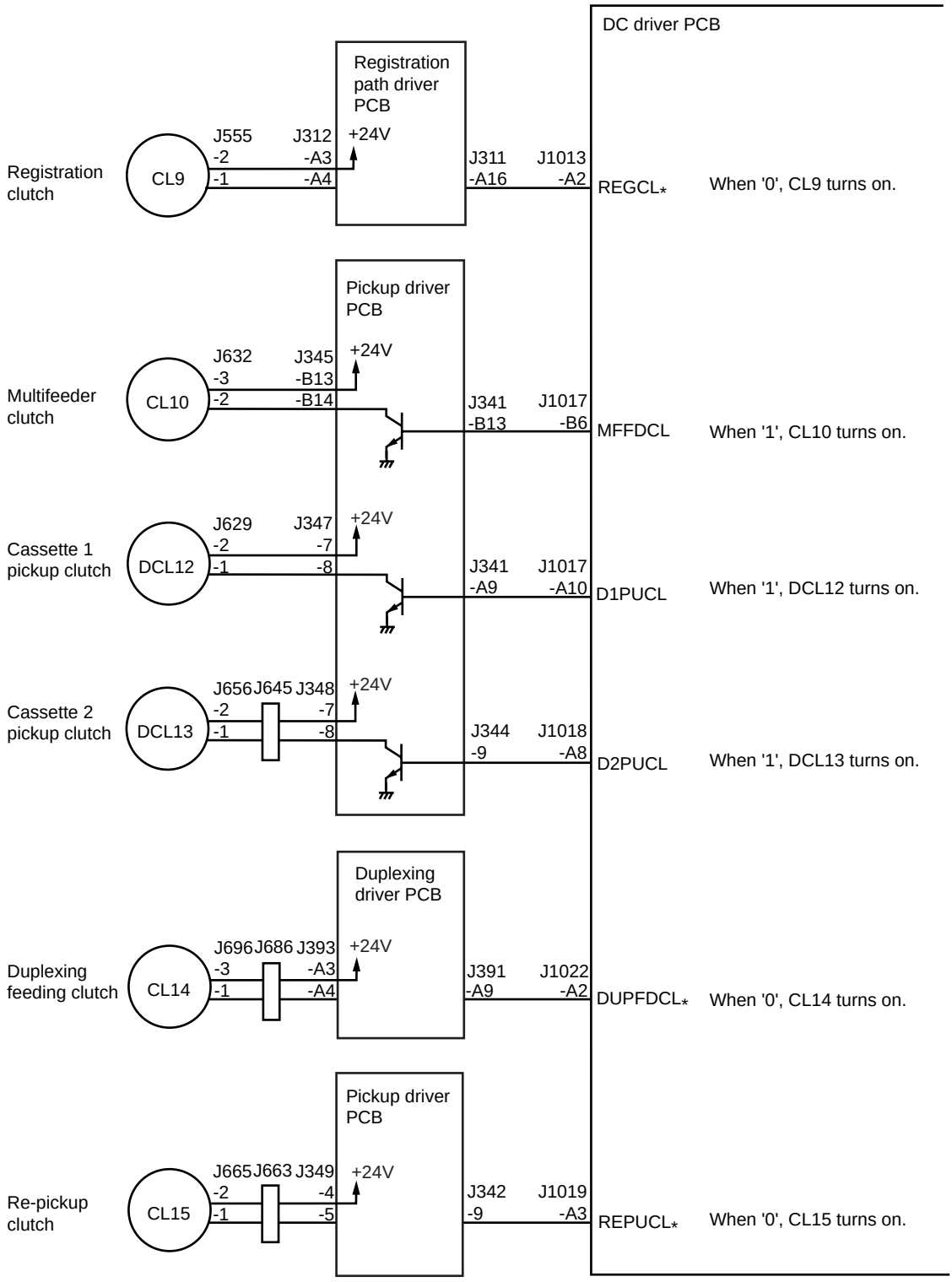

Figure 2-329

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Outputs from the DC Driver PCB (11/15)

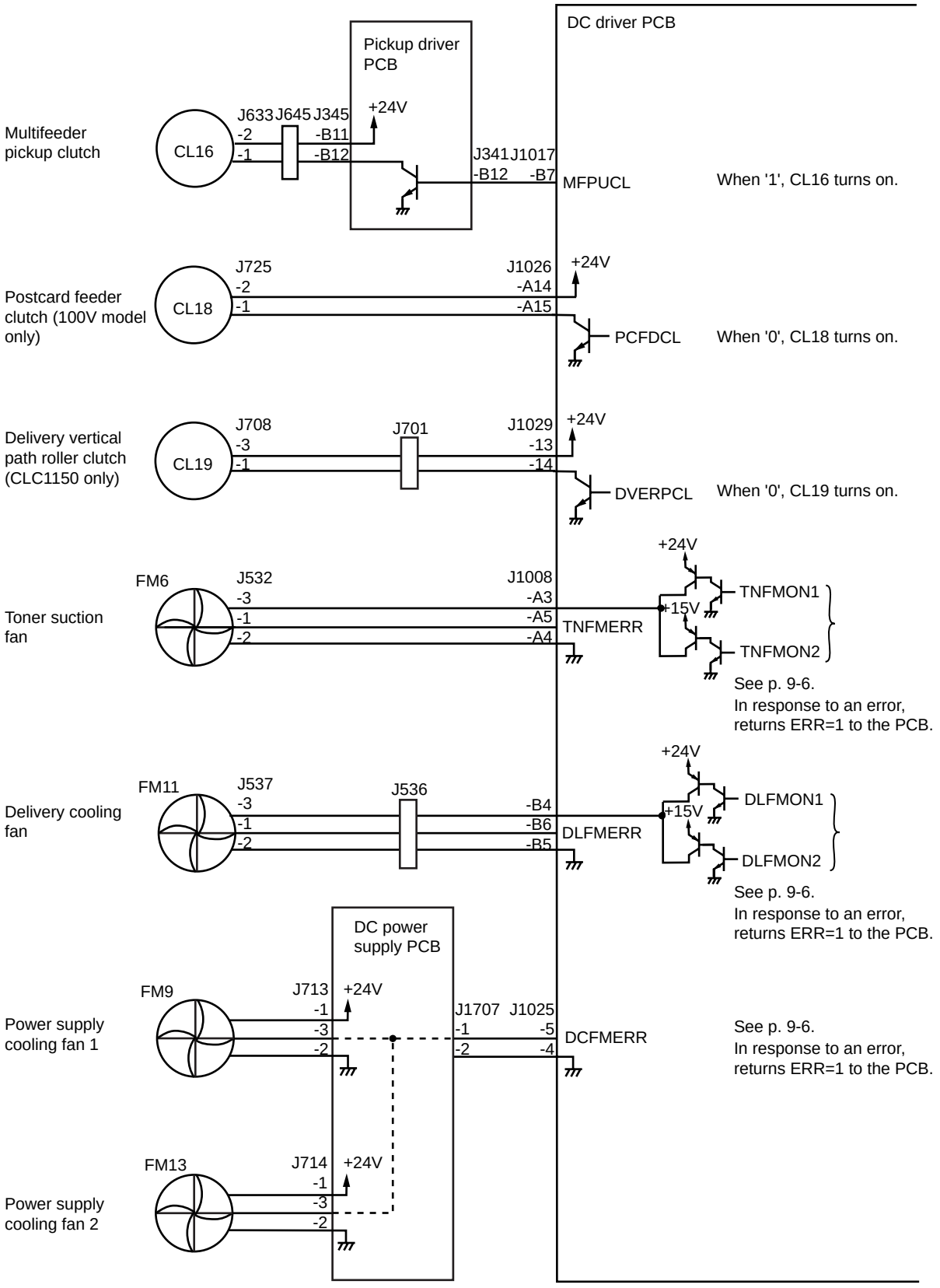

Figure 2-330

Outputs from the DC Driver PCB (12/15)
(CLC1120/1130)

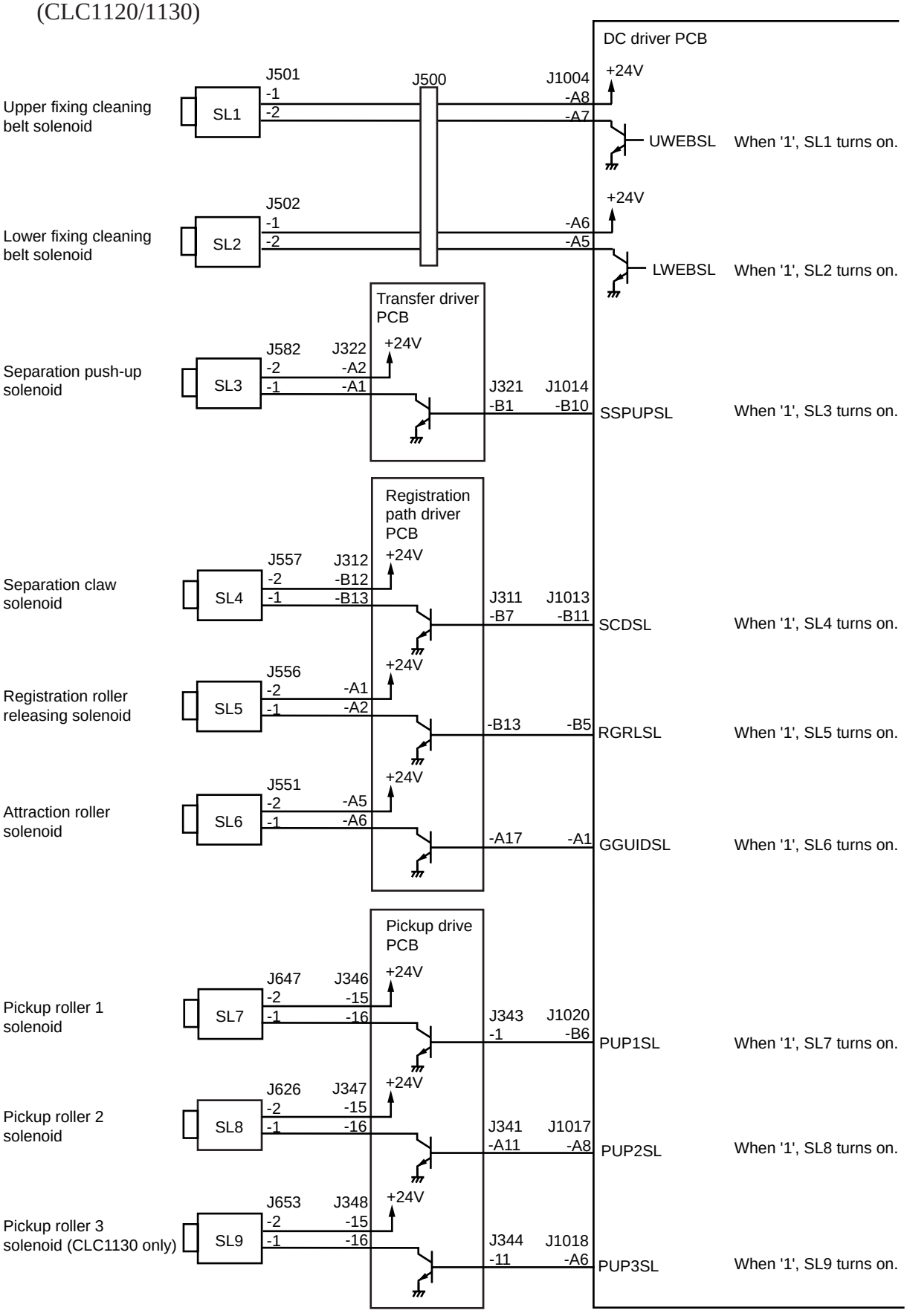

Figure 2-331

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Outputs from the DC Driver PCB (13/15)
(CLC1150 only)

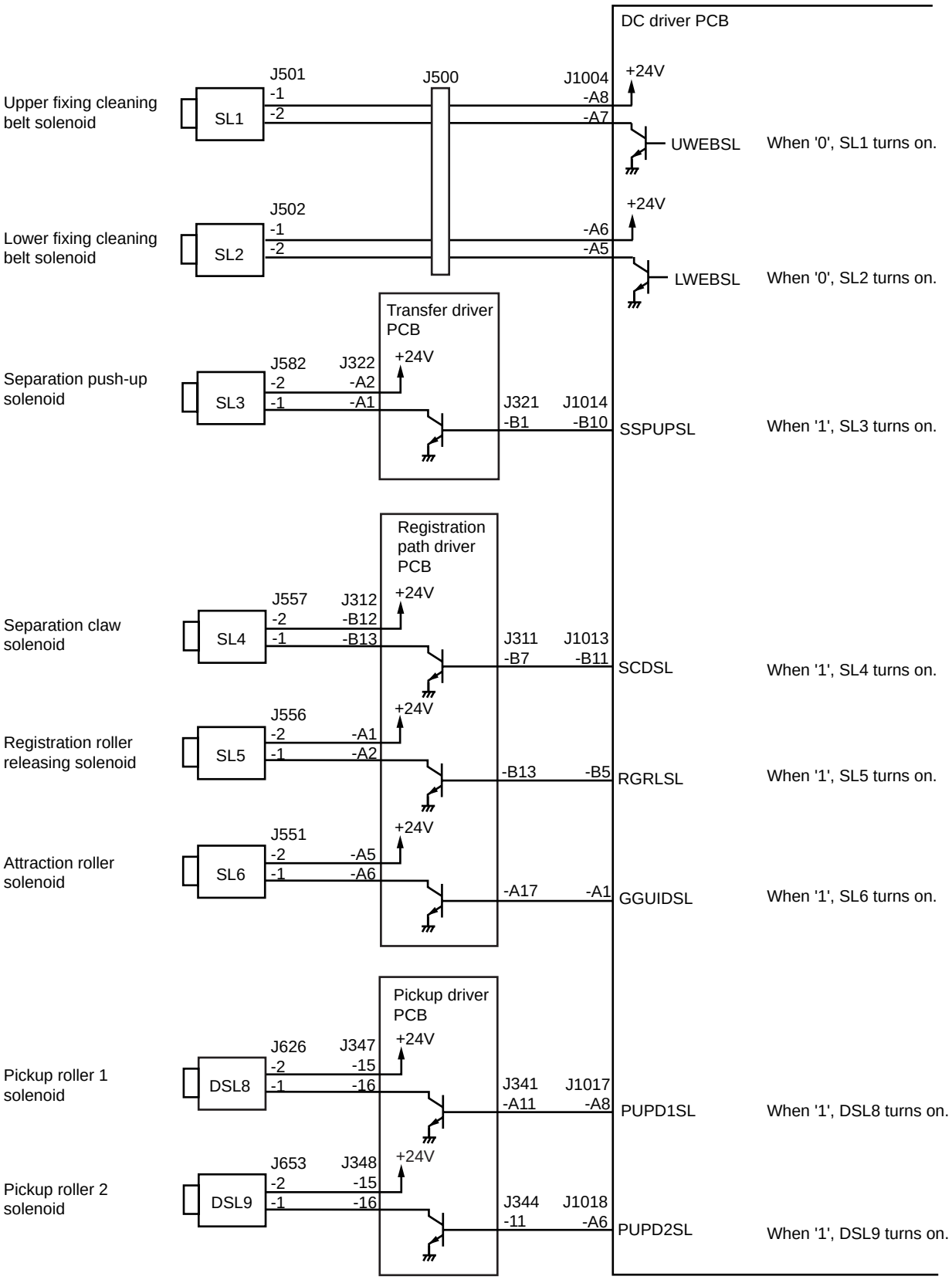

Figure 2-332

Outputs from the DC Driver PCB (14/15)

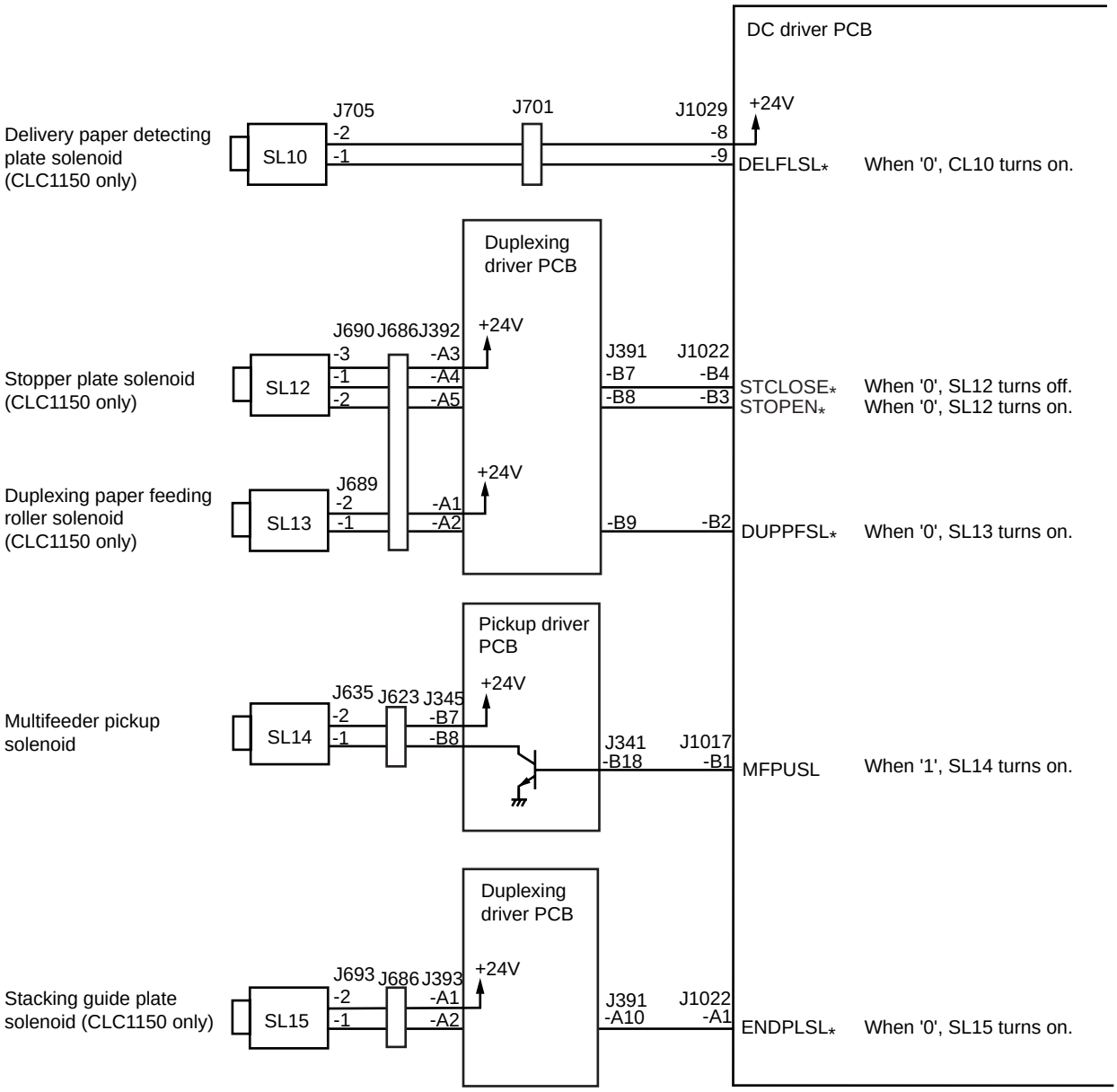

Figure 2-333

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Outputs from the DC Driver PCB (15/15)

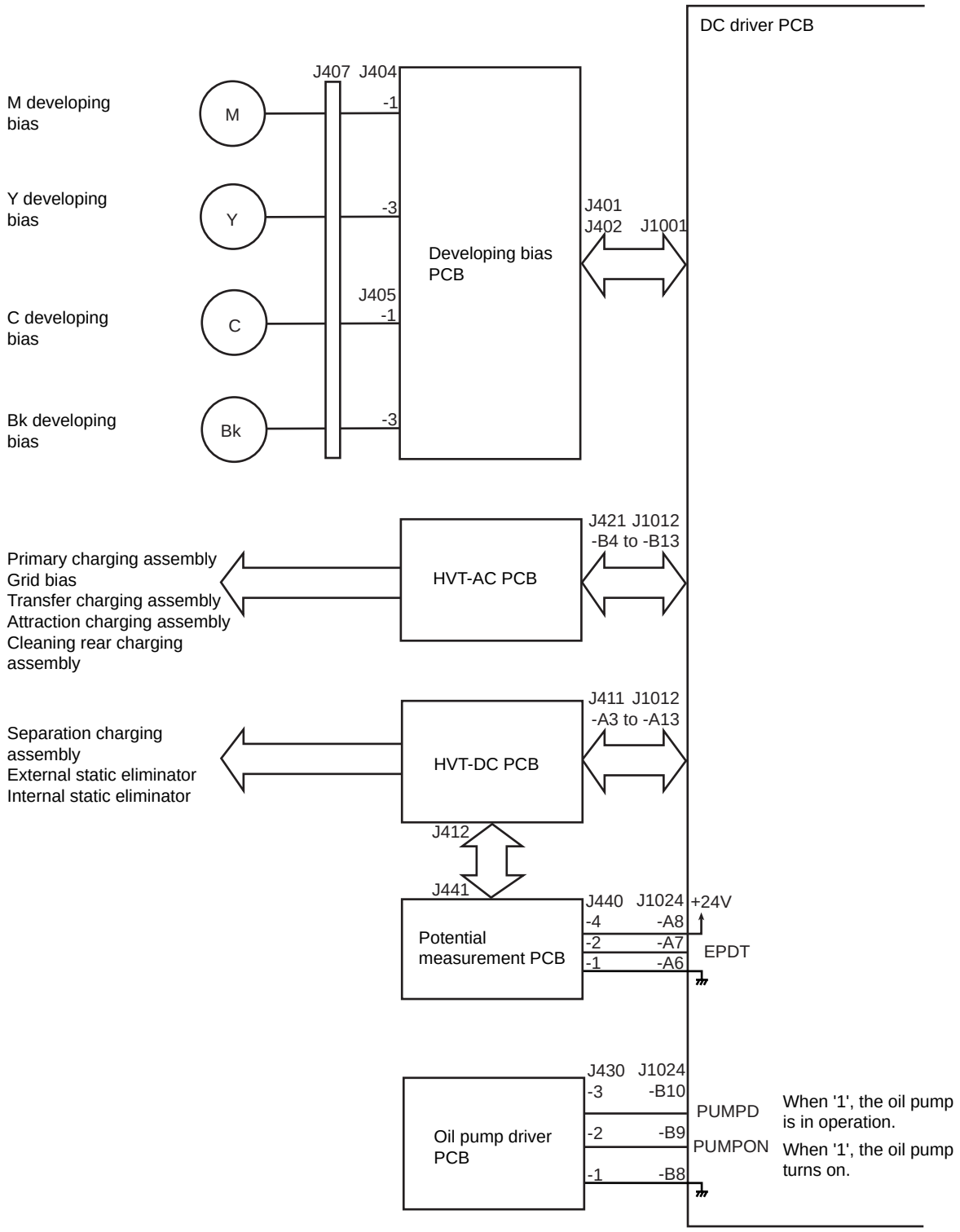

Figure 2-334

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CHAPTER 3

EXPOSURE SYSTEM

This chapter explains the operations and functions of the copier's drive and original detecting mechanisms, and provides an outline of the timing at which various associated parts are driven.

I. OPERATION 3-1
A. Outline 3-1
B. Basic Sequence of Operations 3-2
II. SCANNER DRIVE SYSTEM 3-4
A. Controlling the Scanner Motor 3-4
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III. CONTROLLING THE INTENSITY OF THE SCANNING LAMP 3-6
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A. Original Exposure System 3-9
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I. OPERATION

A. Outline

Figure 3-101 shows a cross section of the original exposure system, and Figure 3-102 shows an external view.

Item	Description
Number of scans	4 scans max. (full color)
Scanner motor (PM15)	The motor is a 5-phase stepping motor used to drive the scanner. Its direction of rotation changes when moving the scanner forward and in reverse, while its speed of rotation changes according to the selected reproduction ratio.
Scanning lamp (LA2)	Halogen lamp (200 W)
Scanner thermal switch 1 (TP1)	Prevents overheating of the scanner. (175ºC)
Scanner thermal switch 2 (TP6)	Prevents overheating of the scanner. (175ºC)
Scanner home position sensor (PS1)	Detects the scanner at its home position.

Table 3-101

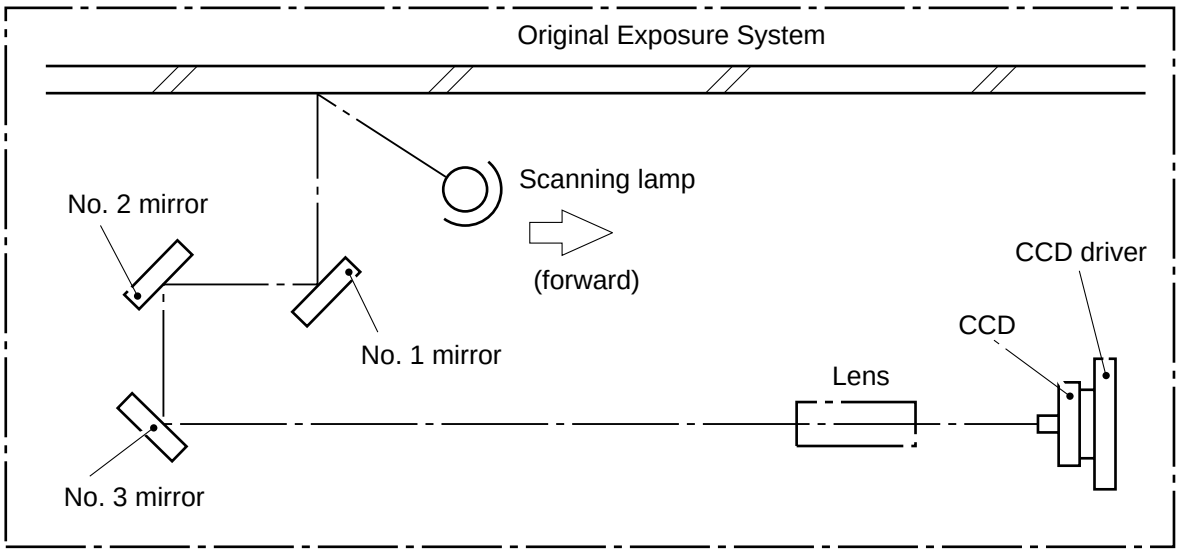


Figure 3-101

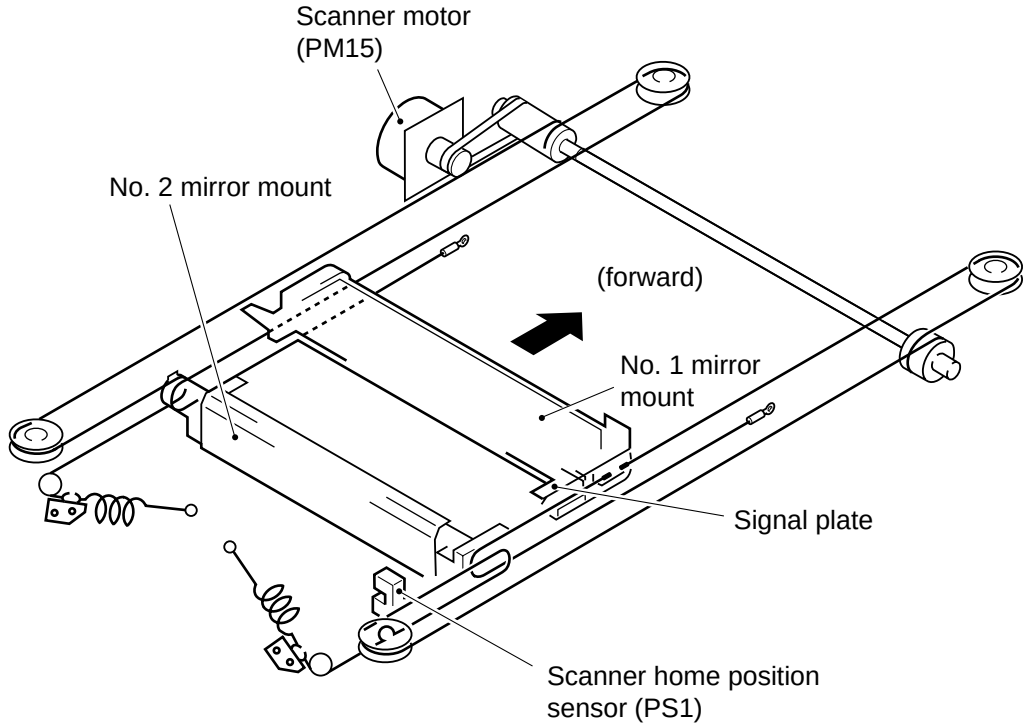
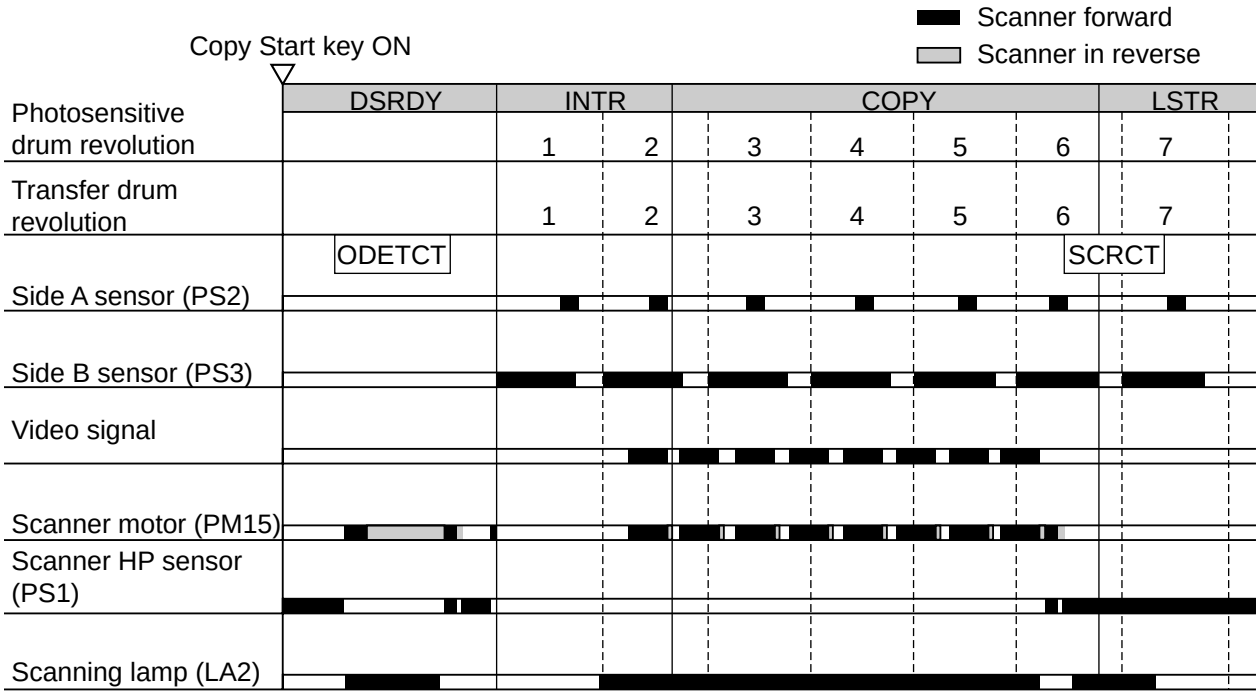


Figure 3-102

B. Basic Sequence of Operations

1. Sequence of Operations



SCRCT: Takes measurements for shading correction.
ODETCT: Performs original position detection, black original detection, and AE measurement.

Figure 3-103 A4/LTR, 2 Copies, Full Color, Direct, Cassette 1

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2. Scanner Home Position Sensor and Operation

	Scanner motor		Operation
	Forward	In reverse	
Original scanner home position sensor (PS1; SCHP)		↑	Switches to forward movement.
	↓		Moves 2 mm in reverse, and stops. (The point at which it stops is the home position.)

Table 3-102

The scanner home position sensor turns on only at the following timing:

- At the end of WMUP after power-on.
- At the end of pre-scanning.
- At the end of all scanning for the specified number of copies.

The sensor is not designed to turn on during continuous copying. If it should turn on because of an erratic operation, the copier will immediately stop scanning.

Figure 3-104 shows the movement of the scanner during copying operation. (The start position is the point reached by the scanner by moving approximately 61 mm from the home position.)

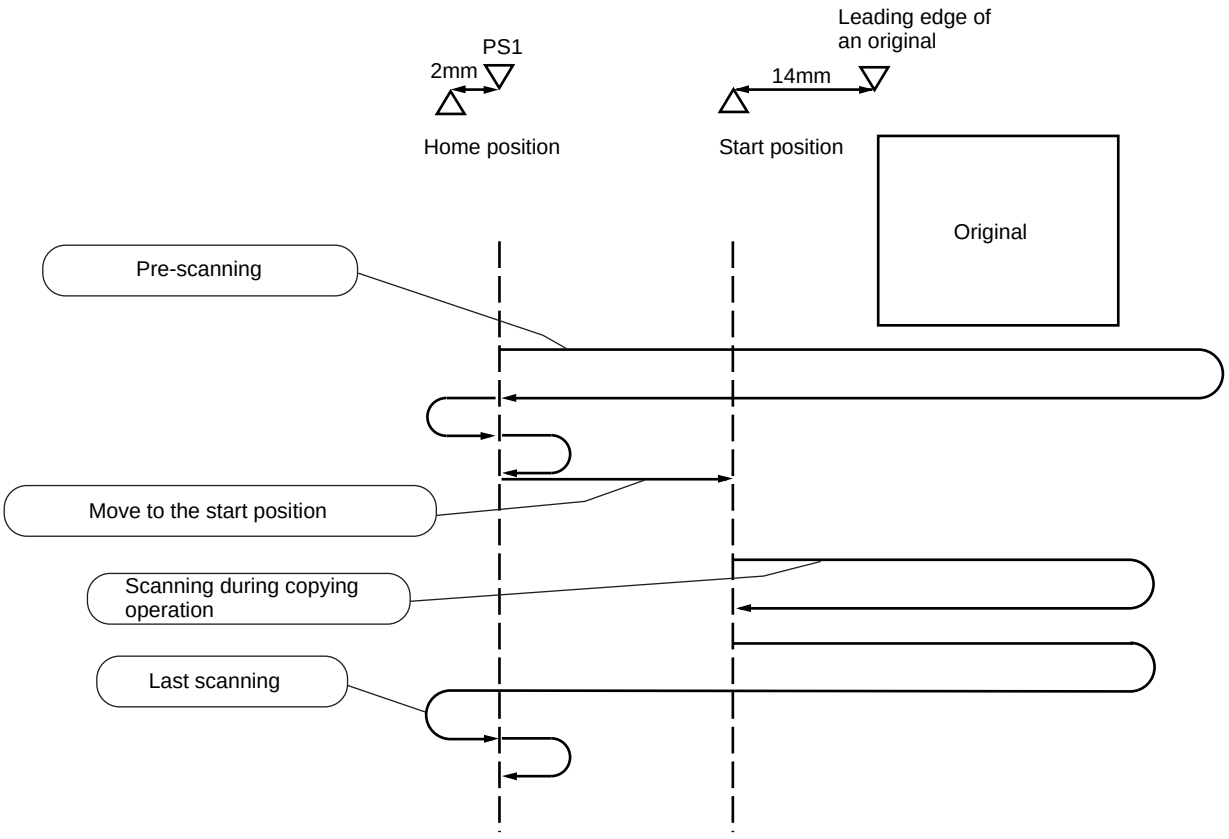

Figure 3-104

II. SCANNER DRIVE SYSTEM

A. Controlling the Scanner Motor

1. Outline

The circuit shown in Figure 3-201 is the circuit used to control the scanner motor (PM15), and has the following functions.

1. Controlling the direction of rotation of the scanner motor.
2. Controlling the direction of rotation of the scanner motor.

The scanner motor changes its direction of rotation when moving the scanner forward and in reverse, and changes its speed according to the selected reproduction ratio.

When moving the scanner in reverse, the speed of rotation remains constant regardless of the selected reproduction ratio. To accommodate the sheet-to-sheet distance needed when retaining two sheets of paper on the transfer drum, the scanner is moved in reverse at a high speed (about ten times as fast as when it is moved forward in Direct).

🕮 Volume 4>Chapter 3>I-D “Original Scanner Motor”

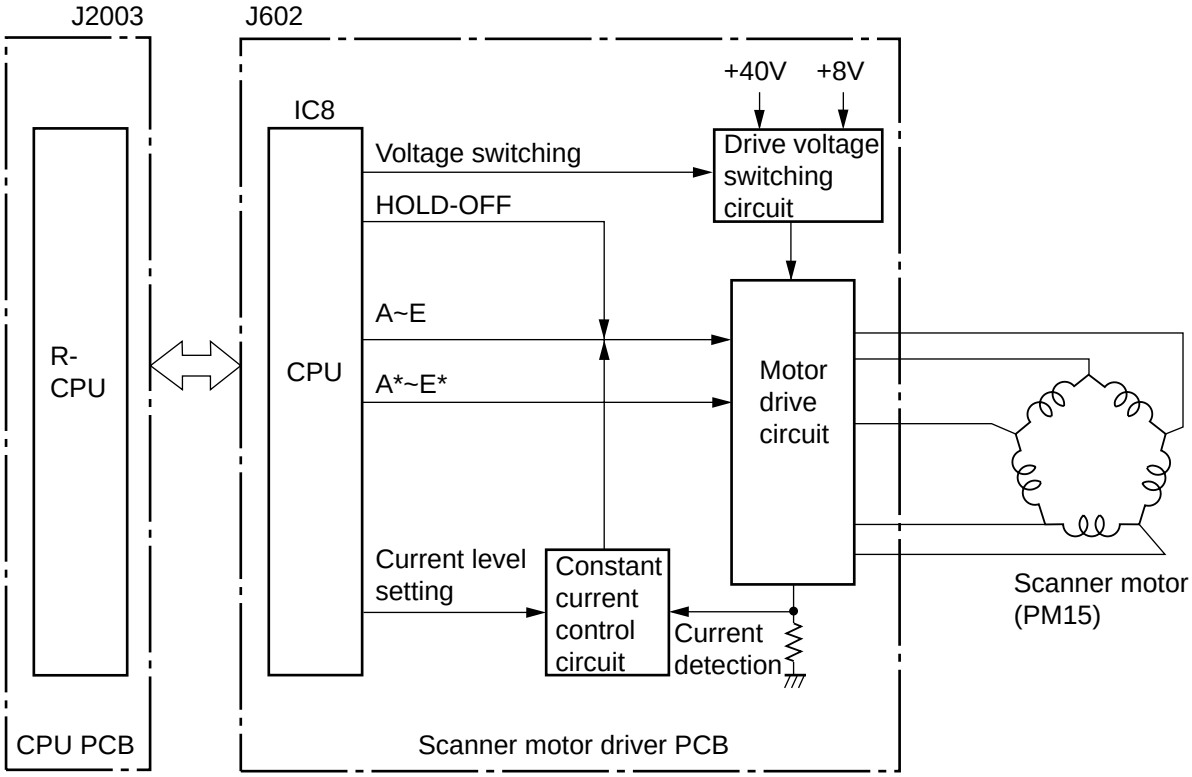

Figure 3-201

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2. Operations

The CPU (IC8) on the scanner motor driver PCB sends drive pulses to the motor according to the scanning mode and distance and the selected reproduction ratio communicated by the CPU PCB to control the rotation and speed of the motor.

To rotate the motor at a high speed when moving the scanner forward and in reverse, the motor drive power is switched from 8 V (forward) to 40 V (reverse). (However, the motor is driven at 40 V even when moving the scanner forward at a reproduction ratio of 90%.)

The HOLD-OFF signal is used to prevent the motor from overheating while it is at rest in standby state.

Related Error Code
E208
The communication between the scanner motor driver PCB and the CPU PCB is disrupted.

B. Changing the Reproduction Ratio

The reproduction ratio in main scanning direction (drum axial direction) is changed by reading every so many image signals for reduction or reading the same image signals so many times for enlargement.

The reproduction ratio in sub scanning direction is changed by moving the mirror mount faster for reduction and slower for enlargement.

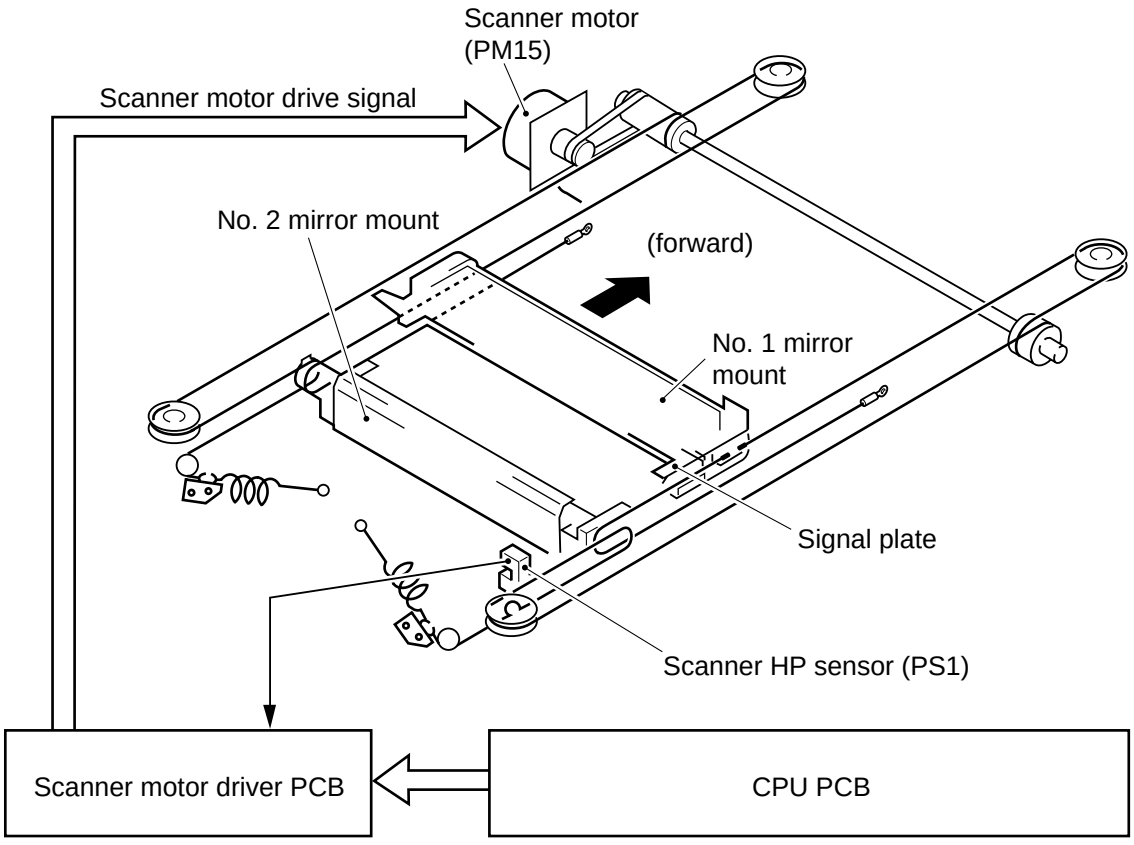

Figure 3-202

III. CONTROLLING THE INTENSITY OF THE SCANNING LAMP

A. Outline

Figure 3-301 shows the circuit that controls the intensity of the scanning lamp (LA2), and has the following functions:

1. Turning on/off the scanning lamp.
2. Finds out whether the scanning lamp is on or not.
3. Controls the intensity of the scanning lamp (so as to keep the intensity to a specific level against fluctuations in power voltage).

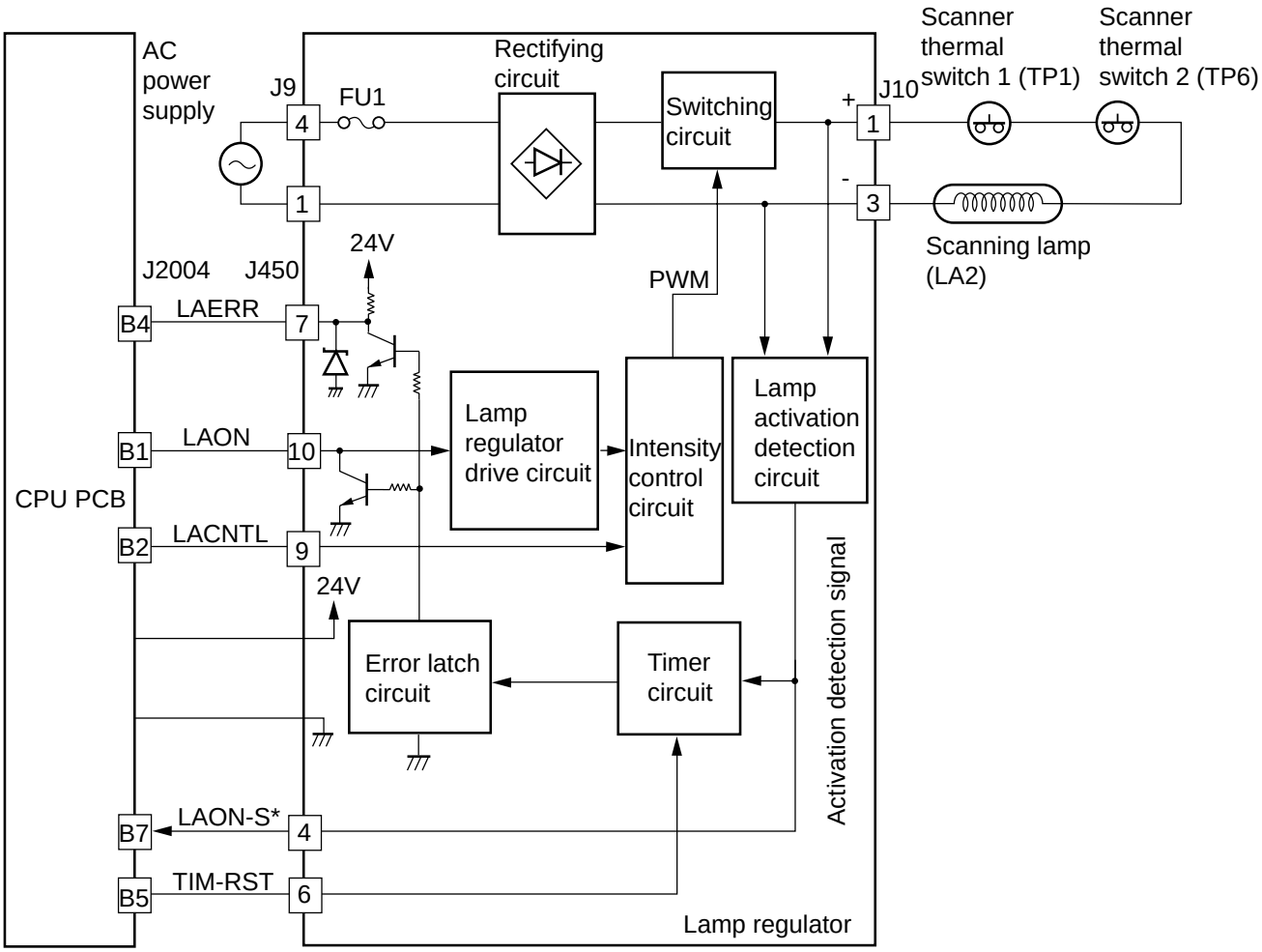

Figure 3-301

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B. Operations

1. Turning On/Off the Scanning Lamp

When LAON=0, the lamp regulator drive circuit and the intensity control circuit turn off, causing the lamp to turn off.

When LAON=1, the lamp regulator drive circuit and the intensity control circuit turn on, causing the lamp to turn on.

2. Detecting the Activation of the Scanning Lamp

When the lamp is on, the lamp activation detection circuit sends the activation detection signal (LAON-S*) to the timer circuit and the CPU PCB (R-CPU). The timer circuit is reset on a periodical basis so that the lamp may be kept on continuously as in A4/LTR continuous copying operation (2-sheet retention).

3. Detecting an Error in the Activation of the Scanning Lamp

If an error keeps the scanning lamp on for about 60 sec (LAON-S*=0) when continuous copying mode (2-sheet retention) is not selected, the timer circuit turns on the error latch circuit to force the LAON signal to go '0', thereby turning off the lamp. At the same time, the lamp error signal (LAERR) is sent to the CPU PCB.

As a result, the copier will indicate 'E220' on the control panel, and activate the auto shut-off mechanism. If such has happened, remove the cause, and turn on the power switch to reset the copier.

In addition, the copier is equipped with the following hardware protective mechanisms to protect against lamp malfunctions:

- If the internal temperature of the thermal switch exceeds 175°C, the thermal switch turns off to cut off the power to the lamp.
- If an overcurrent flows because of a short circuit around the lamp, the fuse (FU1) will blow to turn off the lamp regulator.

Caution:

The contact of the scanner thermal switch (TP1, TP6) is subject to damage when it turns on. Do not use it once it has turned on.

4. Controlling the Intensity of the Scanning Lamp

The intensity of the lamp is determined by the pulse duty of the intensity adjustment signal (LACNTL) from the CPU PCB, and the intensity control circuit inside the lamp regulator sends pulse signal (PWM) to suit the pulse duty to the switching circuit, which in response keep turning on and off at short intervals to control the current to the lamp and, ultimately, the intensity.

The pulse duty of the LACNTL signal is determined in response to FUNCTION>CCD>CCD-ADJ in service mode, and it remains the same until the item is executed the next time.

Related Service Mode

FUNCTION > CCD > ADJ	Be sure to execute this item if you have replaced the standard white plate, scanning lamp, R flash memory, CCD unit, analog processor PCB, or CPU PCB.

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IV. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (**Do not insert a screwdriver or the like into the laser path.**)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum. The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Original Exposure System

1. Removing the Scanning Lamp

1) Remove the vertical side plate.
2) Remove the copyboard glass.
3) Remove the standard white plate cover.
4) Remove the screw [1], and detach the right stay [2].
5) Remove the three screws [3], and detach the anti-reflection plate [4].

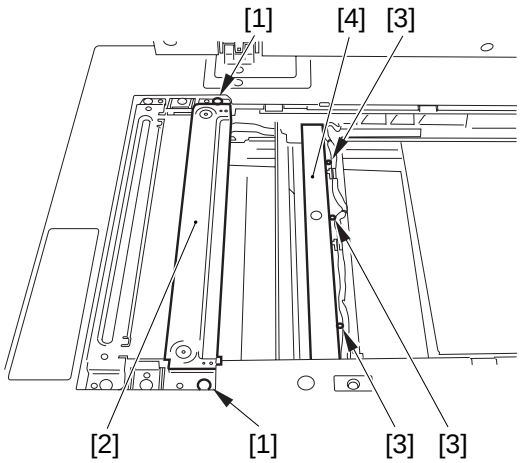

Figure 3-401

6) Shift the scanning lamp to where the right stay [2] was found. Turning a flat-blade screwdriver in the direction of the arrow [5], open the electrode plate in the direction of the arrow [6] to detach the scanning lamp.

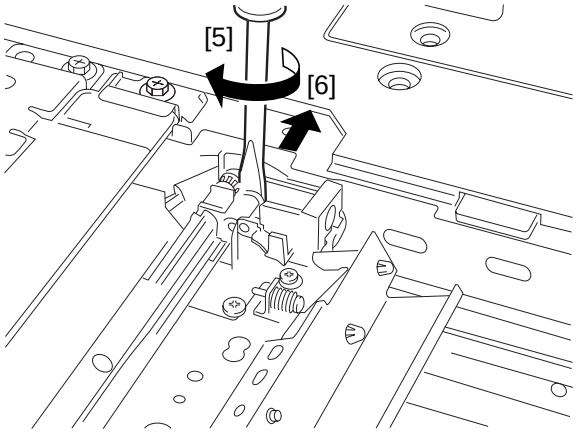

Figure 3-402

Caution:

1. Do not work if the surface of the scanning lamp is hot.
2. Do not leave fingerprints on the surface of the scanning lamp.
3. Dry wipe the surface of the scanning lamp if it is soiled.

2. Orienting the Scanning Lamp

Fit the scanning lamp so that the protrusion [1] at its center is in the direction of the arrow, and its side with a logo marking is toward the rear.

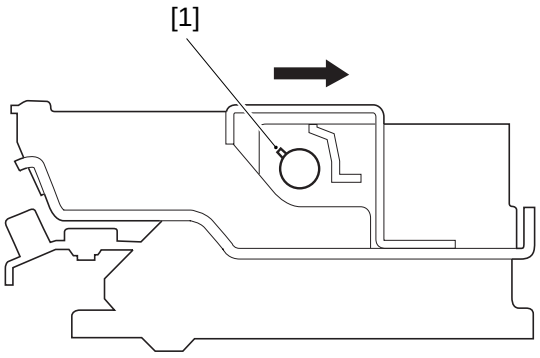

Figure 3-403

Caution:

Do not touch the surface of the scanning lamp when mounting it.

3. Removing the Standard White Plate

1) Remove the vertical size plate.
2) Remove the copyboard glass.
3) Remove the two screws [1], and detach the standard white plate cover [2].

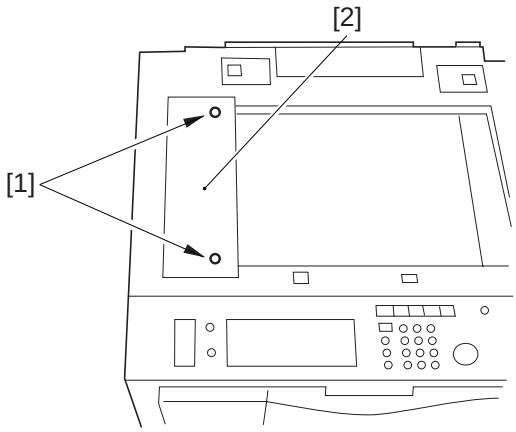

Figure 3-404

4) Remove the two screws [3], and detach the left stay [4].
5) Remove the two screws [5], and detach the standard white plate [6].

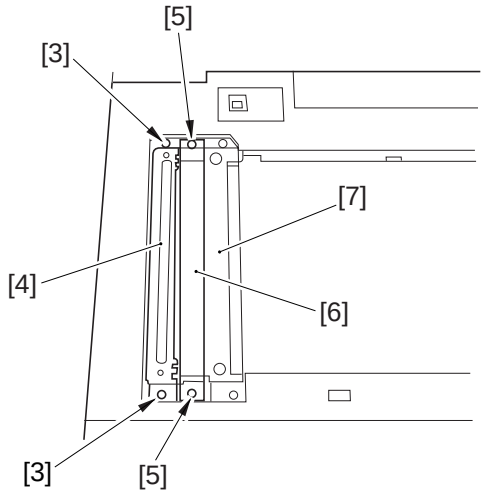

Figure 3-405

Caution:
Mount the standard white plate [a] as shown, i.e., its cut-off [b] is toward the front [c].

4. Mounting the Standard White Plate

1) Place the standard white plate [6] by butting it against the right stay [7].
2) Secure the left stay [4] in place with two screws [3] as if to butt it against the standard white plate [6].
3) Secure the standard white plate [6] in place with two screws [5].

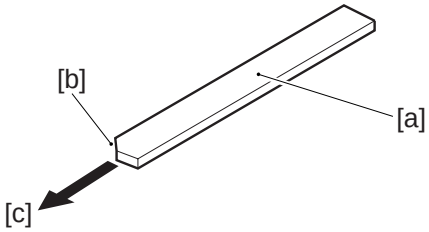

Figure 3-406

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B. Scanner Drive Assembly

1. Removing the Scanner Drive Motor

1) Remove the rear cover and the rear upper cover; then, detach the flywheel.
2) Remove the primary charging assembly fan.
3) Disconnect the connector [1], and remove the four screws [2]; then, detach the scanner drive motor [3] together with its support plate.
4) Remove the two screws, and detach the scanner drive motor from the support plate.

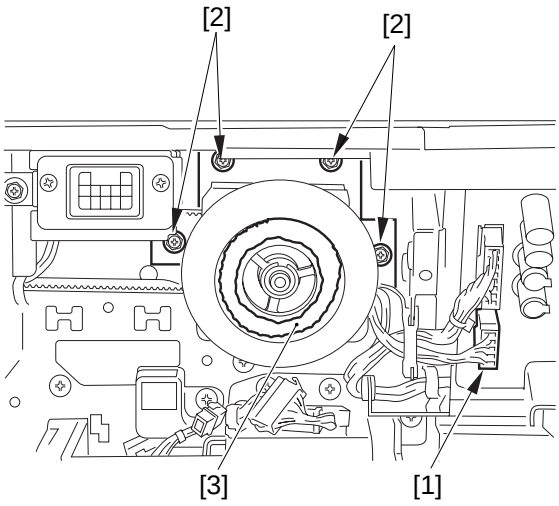

Figure 3-407

2. Adjusting the Tension of the Belt When Mounting the Scanner Drive Motor

1) Put the belt over the pulley, and tighten the screw by moving the motor as much as possible to the right.

Caution:

Take extra care when mounting the motor so that you will not trap the scanner cable during the work. (It is a good idea to push away the scanner cable when tightening the screw.)

3. Routing the Scanner Cable

Obtain the mirror positioning tool (FY9-3040-000) when mounting the scanner cable.

1) Remove the copyboard cover.
2) Remove the vertical size plate.
3) Remove the copyboard glass.
4) Remove the control panel.

5) Remove the rear cover and the rear upper cover.
6) Remove the upper cover.
7) Remove the left stay [1] and the standard white plate [2]; then, detach the right stay [3].

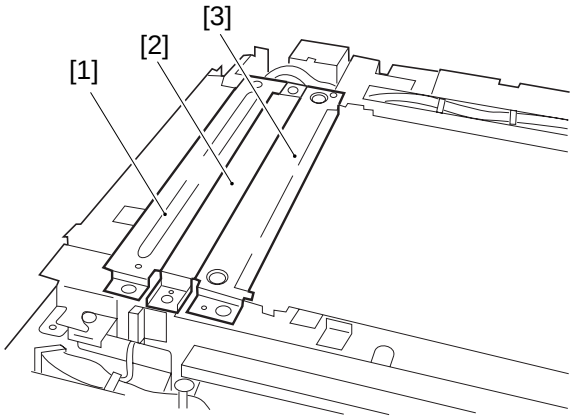

Figure 3-408

Caution:
Mount the standard white plate [a] so that its cut-off [b] is toward the front [c].

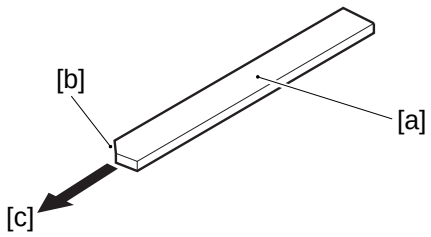

Figure 3-409

8) Remove the flywheel.
9) Remove the original exposure cooling fan 1.
10) Remove the four screws [4], and detach the RDF mount (left rear, on the fixing assembly side) [5].

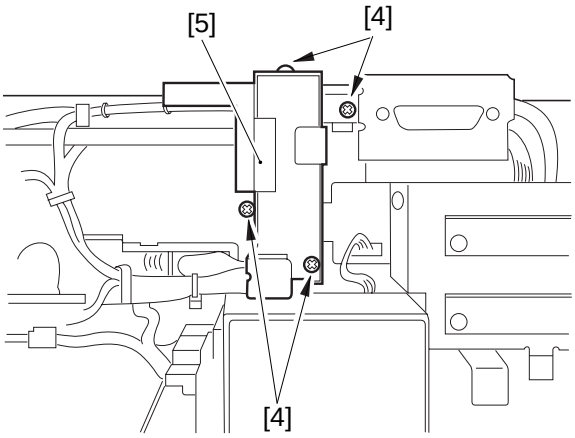

Figure 3-410

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11) Move the No. 2 mirror mount so that the pulley shaft [6] of the No. 2 mirror mount is visible through the long hole in the side plate.

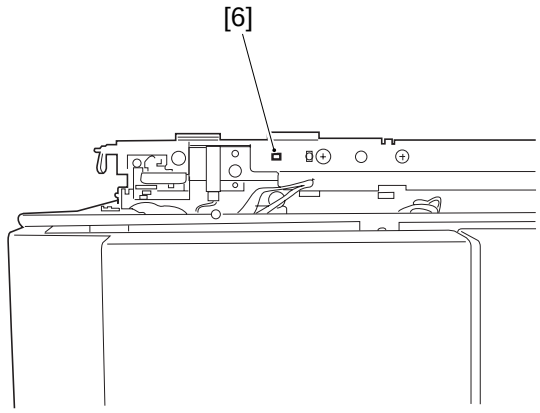

Figure 3-411 Front of the Copier

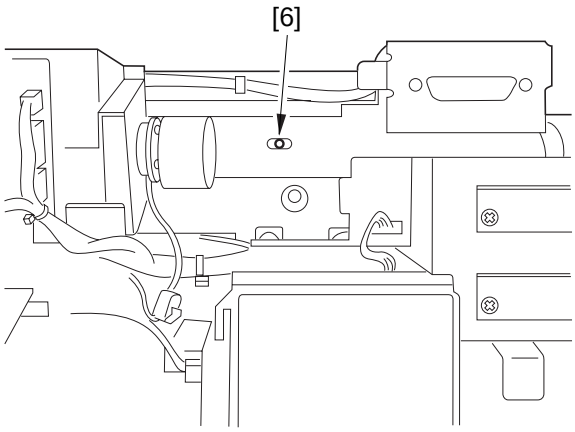

Figure 3-412 Rear of the Copier

12) Fit the binding screw (M4x8) [7] to the pulley shaft, and temporarily secure the pulley to the side plate (front, rear) in place, thereby temporarily securing the No. 2 mirror mount in place.

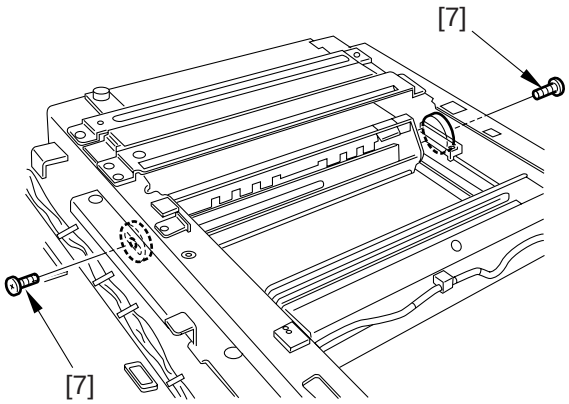

Figure 3-413

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13) Engage the scanner cable on the pulley and hooks as shown.

Caution:

- Take care not to damage the cable by the edge of the metal plate.
- Keep the four screws [8] loose during the work.

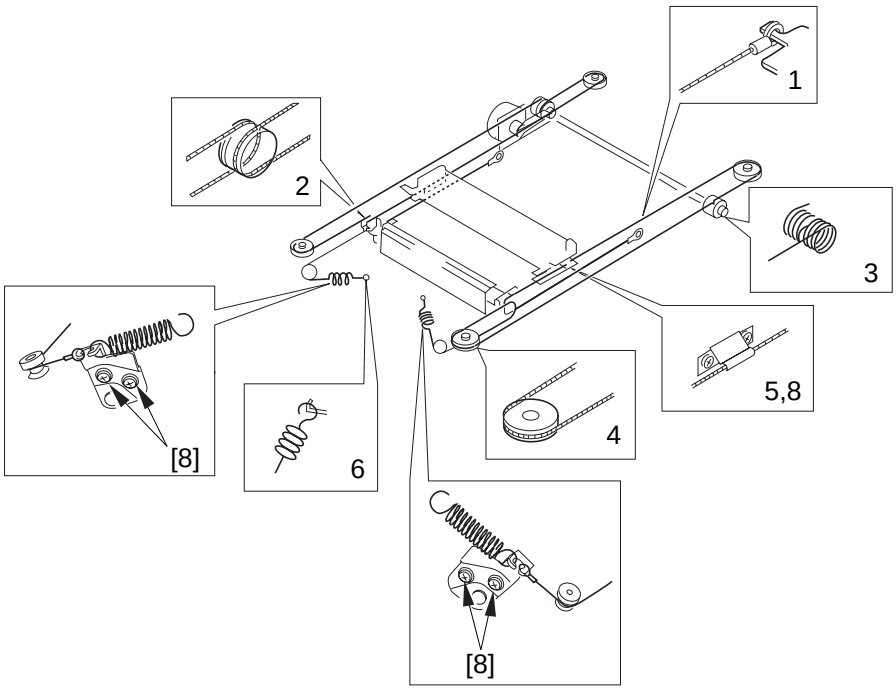

Figure 3-414

14) Remove the screw [7] fitted in step 12). (both front and rear)
15) Loosen the screw on the mirror positioning tool (FY9-3040-000), and extend the arm [9] fully.

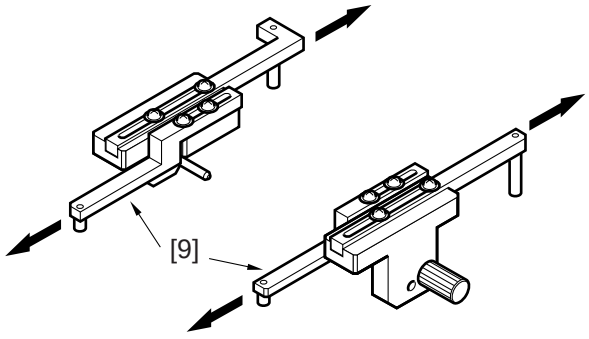

Figure 3-415

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16) Fit the mirror positioning tool [10] between the No. 1 mirror mount and the No. 2 mirror mount, and insert the pin [11] that comes with the mirror positioning tool.

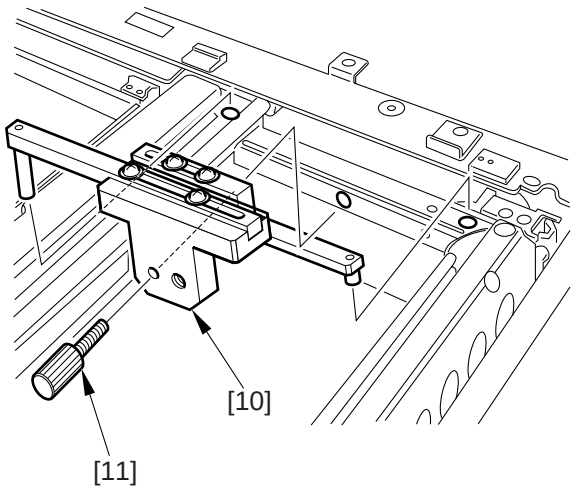

Figure 3-416

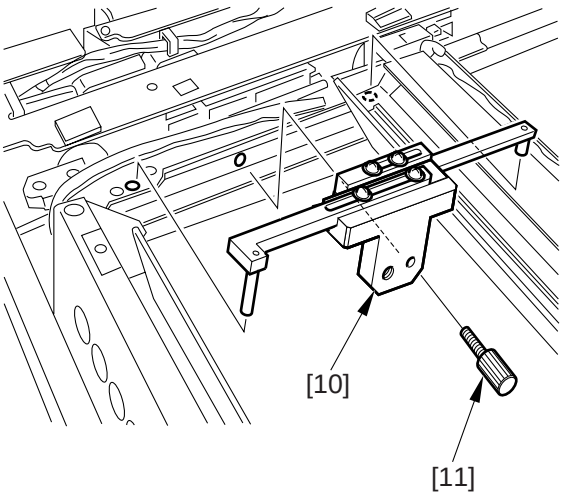

Figure 3-417

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17) Secure the metal fixing [12] of the scanner cable to the No. 1 mirror mount with two screws [13] through the angle hole in the side plate.

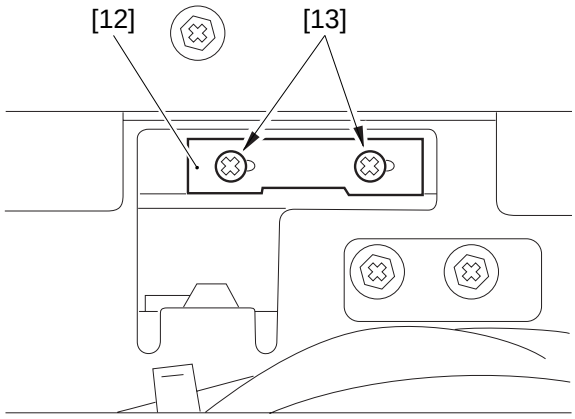

Figure 3-418

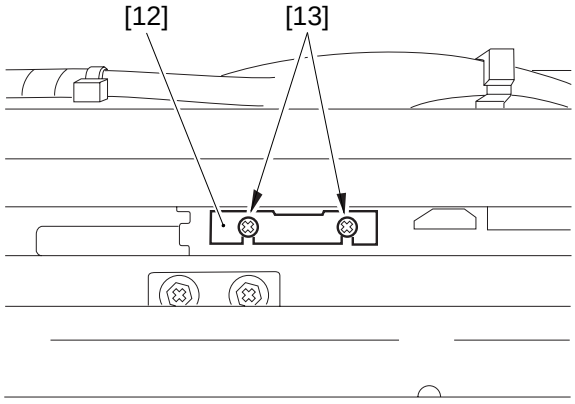

Figure 3-419

18) Detach the mirror positioning tool.
19) When all work is done, move the No. 1 mirror mount by hand (as if to make about 10 A3 full scans), thereby adapting the cable to the pulley and the hooks.
Then, fully tighten the four screws [8] that have been kept loose.

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CHAPTER 4

IMAGE PROCESSING SYSTEM

This chapter explains the operations and functions of the copier's image processing mechanisms, and provides an outline of the timing at which various associated parts are driven.

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A. Controlling the CCD 4-2
B. CCD Driver Circuit 4-2
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I. OUTLINE

Table 4-101 shows the major functions of the image processing system.

Item	Description
CCD/CCD driver PCB	Converts (photo conversion) light reflected by an original into electrical signals.
Analog processor PCB	Performs analog image processing (odd-/even-number bit integration, BGR level matching, A/D conversion).
Image processor PCB	Performs digital image processing (shading, YMCBk conversion, various image processing).

Table 4-101

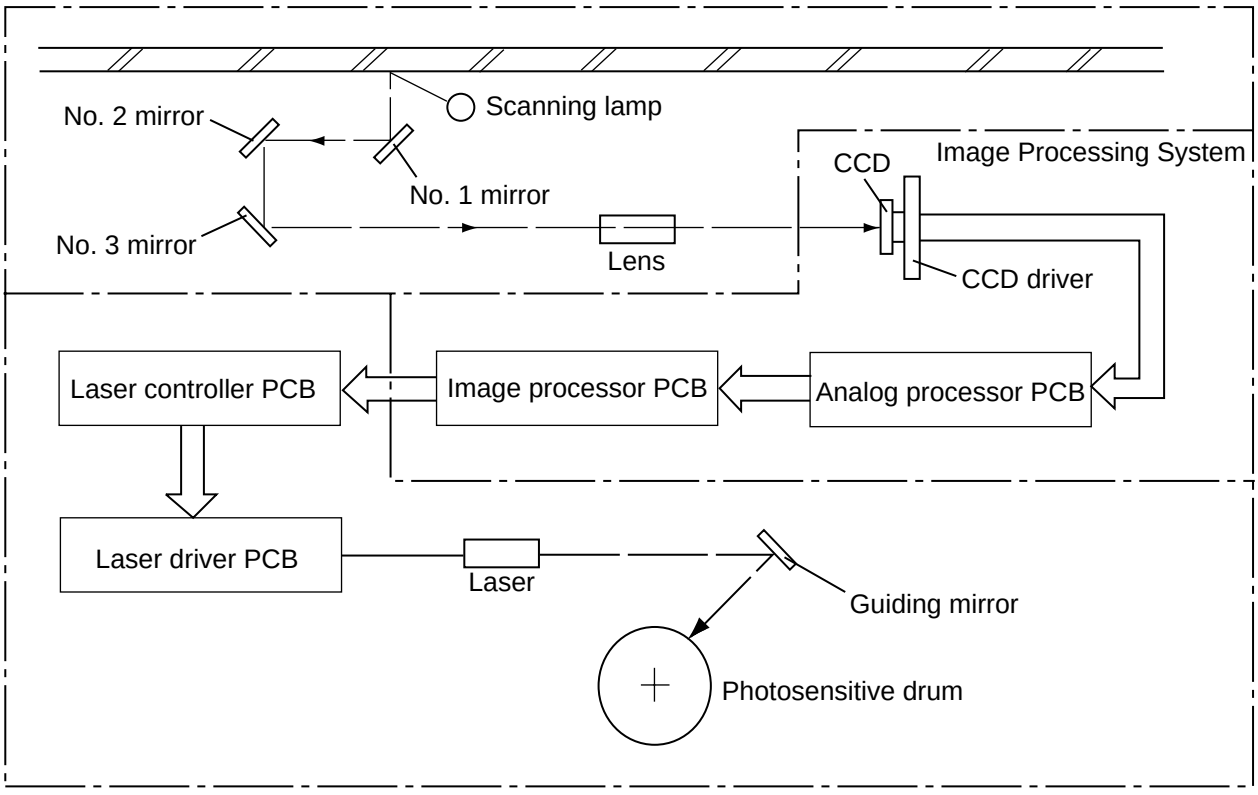

Figure 4-101

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II. CCD/CCD DRIVE

A. Controlling the CCD

Table 4-201 shows the major specifications of the CCD.

Item	Specifications
Number of CCD lines	3 lines (GBR)
Number of CCD pixels	5000 pixels/line
Output system	2 channels (odd-/even-number)

Table 4-201

B. CCD Driver Circuit

The CCD driver reduces the impedance of image signals from CCD in its buffer (impedance reduction circuit), and sends the result to the analog processor PCB.

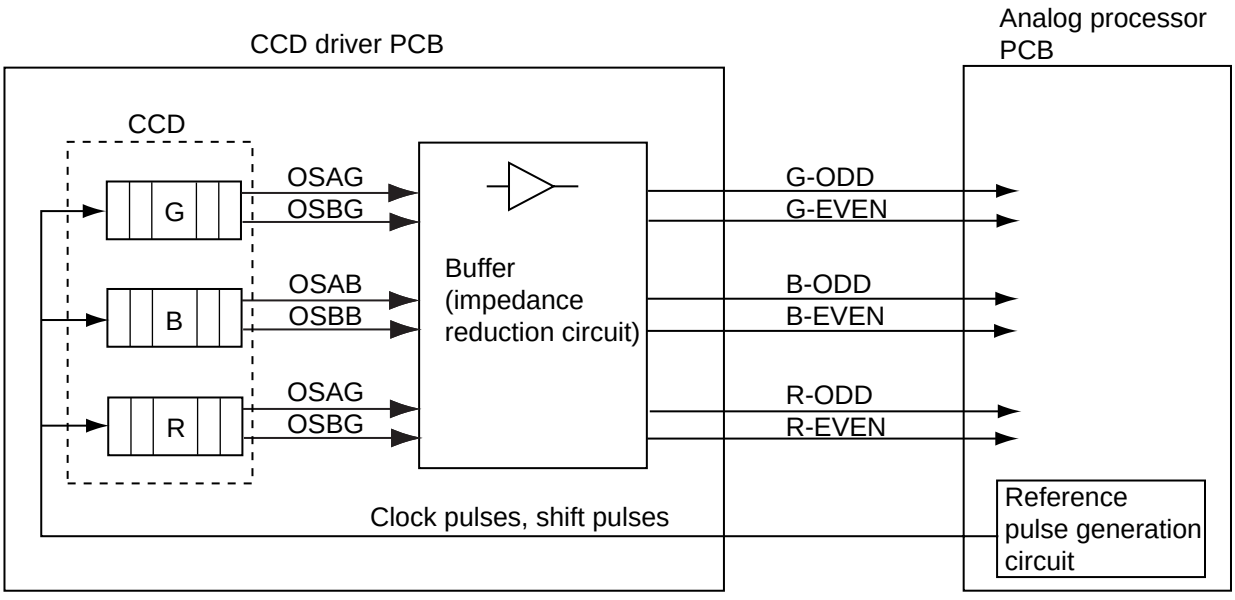

Figure 4-201

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III. ANALOG IMAGE PROCESSING

The analog processor circuit performs the following on the output of the CCD:

Item	Description
BGR level matching	The levels of the B, G, and R signals are matched to suit the B, G, and R offset signals to correct the rate of efficiency of photo conversion (for B, G, and R).
Odd-/even-number bit integration	The image signals of the six separate channels (according to odd-number bits and even-number bits) are held by sample hold signals (SH), and are integrated into image signals of three channels (B, G, R) to suit the select signal (SEL).
A/D conversion	The A/D conversion circuit converts B, G, and R image signals into 8-bit digital signals each in sync with the ADCLK signal, and sends the result to the image processor PCB.

Table 4-301

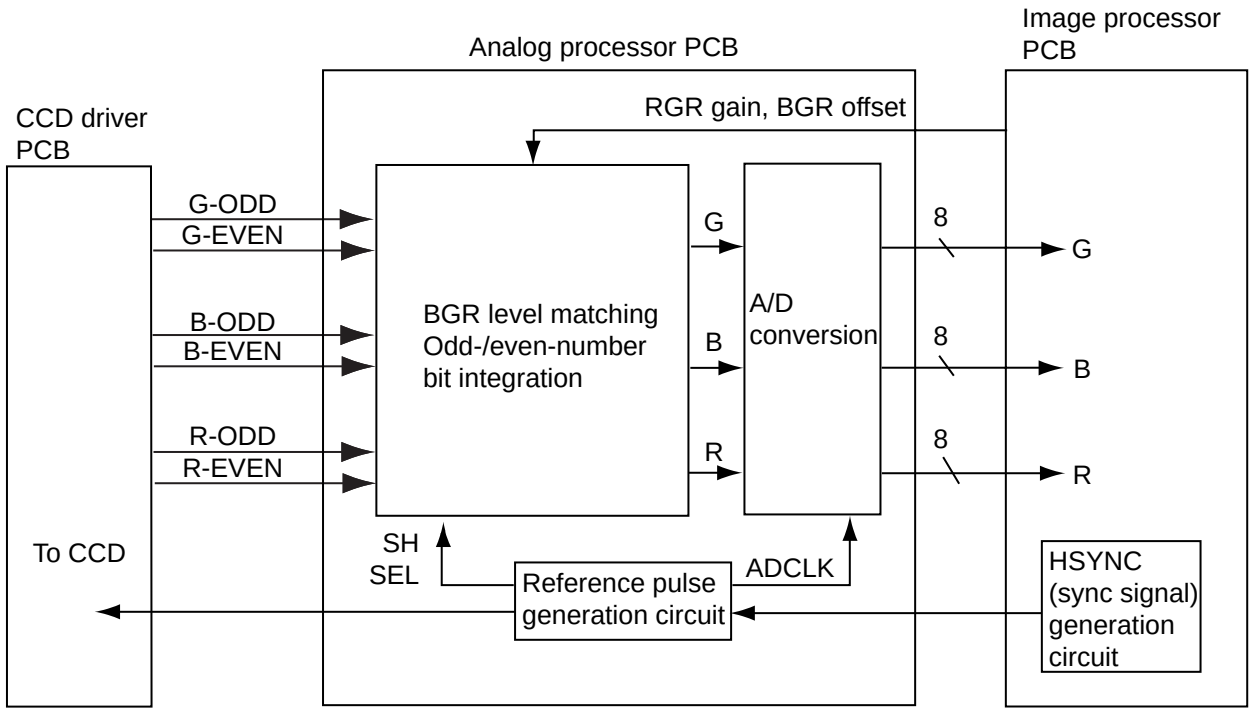

Figure 4-301

IV. DIGITAL IMAGE PROCESSING

A. Outline

The copier uses the PCBs shown in Table 4-401 to perform digital image processing, and all these PCBs are collectively referred to as the “image processor”.

The B, G, and R image signals from the analog image processing block are converted into Y, M, C, and Bk image signals in the digital image processing block.

At the same time, each data unit is converted for image processing selected on the control panel. At the end of data conversion, the image data is sent to the printer unit in the form of 8-bit image signals.

PCB	Description	CLC1120 CLC1130	CLC1150
IP MOTHER (IP motherboard)	bus for each IP PCB	○	○
IP-MAIN (IP main)	shading correction, 3-line position matching, color correction, original size detection, chromatic space compression, logarithmic correction, coloring, contouring, density correction, enlargement/reduction, slanting, sharpness/filter processing, anti-counterfeit processing, black character generation (black extraction)	○	○
IP-ECO	assists the IP-MAIN	○	○
IP-ED	interface between external devices and copier editing functions by signals from the editor (color conversion, texture processing)	△	△
IP-IF	interface between external devices and copier	△	△
IP-PRJ	auto focusing in combination with the projector and shading correction, color correction, mirror processing when the projector is in use	△	△

Table 4-401

- In the table, ○ indicates a function available as a standard, △ indicates a function available as an accessory, and × a function not available.
- Either an IP-IF PCB or an IP-ED PCB may be installed as an accessory.

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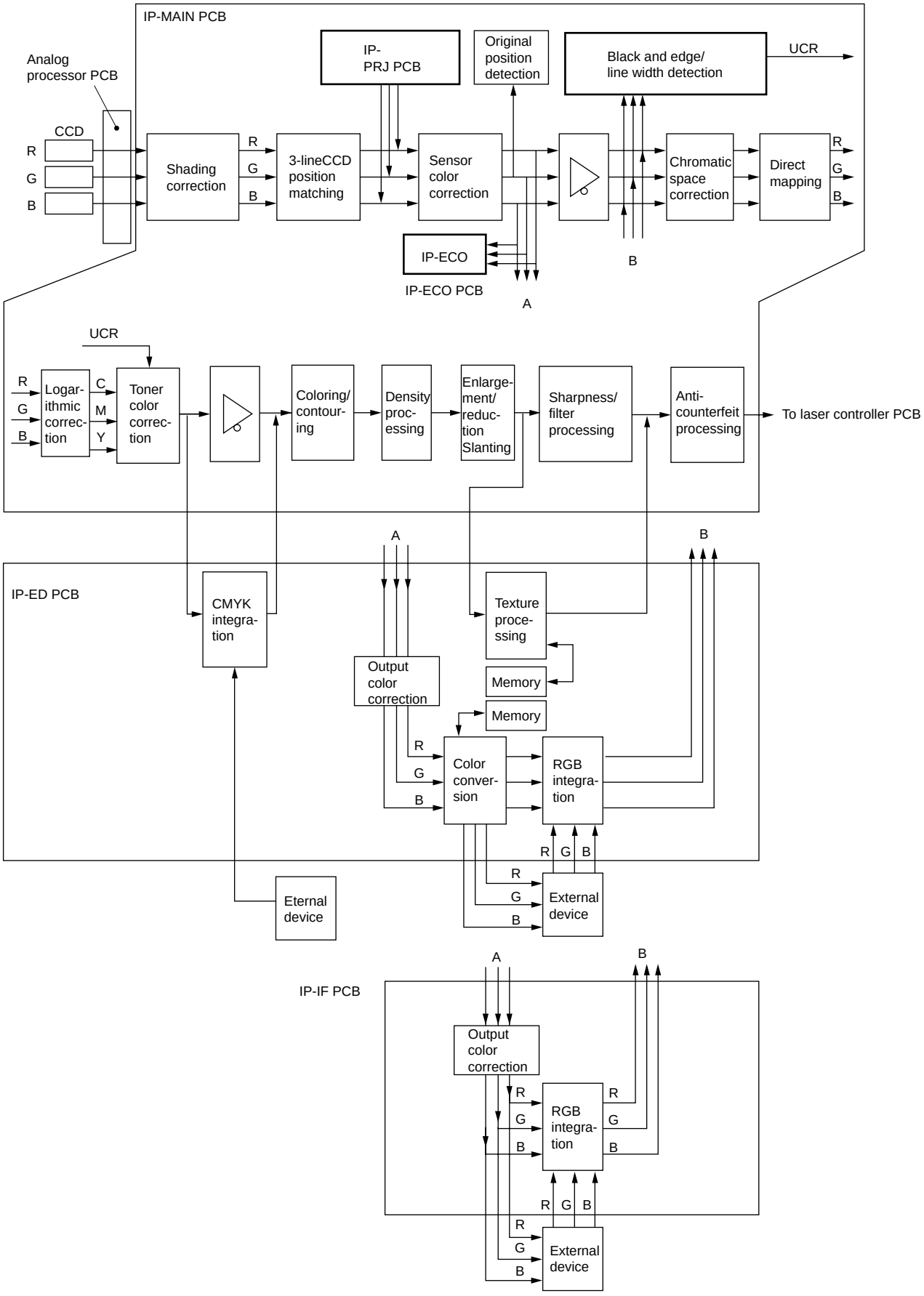
IP-MAIN PCB
Analog processor PCB
CCD
R
G
B
Shading correction
3-lineCCD position matching
Sensor color correction
IP-PRJ PCB
Original position detection
Black and edge/ line width detection
UCR
Chromatic space correction
Direct mapping
IP-ECO
IP-ECO PCB
A
B
UCR
Logar-ithmic correc-tion
C
M
Y
Toner color correc-tion
Coloring/ contour-ing
Density proc-essing
Enlarge-ment/ reduc-tion Slanting
Sharpness/ filter processing
Anti-counterfeit processing
To laser controller PCB
IP-ED PCB
CMYK integra-tion
Texture proce-ssing
Output color correction
Memory
Color conver-sion
RGB integra-tion
External device
Eternal device
IP-IF PCB

Figure 4-401

B. Shading Correction

The output of the CCD will not necessarily be uniform even if the light it receives is from an original of even density. To make up for any discrepancy, shading correction is performed and the data (collected while scanning an original) is corrected to generate data representing uniform light distribution.

Measurements for correction are taken when the power switch is turned on and at the end of copying operation, thus preparing for the next copying job.

📖 Volume 4>Chapter 4>IV-B “Shading Correction”

a. Shading Correction

1. The CCD reads the bar code found under the standard white plate, and determines a correction target value (Reference 1).
2. The CCD measures the light reflected by the standard white plate, and generates its output.

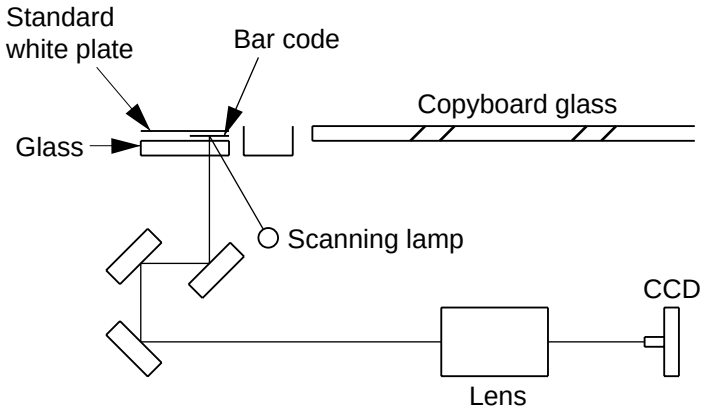

Figure 4-402

3. The shading correction circuit compares the measurements taken in 2 against the target value determined in 1, and saves the difference as the shading correction value.

Reference:

1. A bar code label is attached to the copier’s standard white plate. At the factory, light of a specific intensity is directed to the standard white plate and measured (B, G, and R values); the result is converted, and printed in the form of a bar code for shipment.
2. The color balance of light areas may be adjusted in service mode (ADJUST>COLOR>ADJ).
3. If the density or color balance of copies of a negative film cannot be corrected using a base film, use service mode (PRJ>ADJUST>NEGA).
4. Scratches or dirt on the standard white plate will be subject to stronger shading correction, causing vertical white lines on copies. If such is the case, clean the standard white plate; if the problem is not corrected, try changing the position of shading correction using service mode (ADJUST>ADJ-XY>ADJ-S).

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C. 3-Line CCD Position Matching Circuit

The copier's CCD consists of three lines and, as such, signals resulting from a line image scanned by the scanner at a single point will reach the CCD with a discrepancy (about 0.38 mm in relation to the copyboard glass; equivalent of 6 lines).

To correct such a discrepancy, the 3-line CCD position matching circuit temporarily stores the R and B image signals in a line memory for output together with the G image signal. (See Figure 4-403.)

Reference:

The delay of the G image signal is maximum at a 400% ratio. As a result, the R image signal and the B image signal are sent out with a delay of 48 lines and 24 lines, respectively.

D. Sensor Color Correction Circuit

The sensor color correction circuit serves to correct the transmission characteristics of the B, G, and R filters found inside the CCD.

Ideally, each filter should pass light of specific wavelengths and block light of other wavelengths. In reality, however, light of wavelengths within a and c in Figure 3-312 is let to pass, while light of wavelengths within b is blocked, requiring the use of the circuit. (See Figure 4-404.)

📖 Volume 4>Chapter 4>IV-D "Color Correction for the Sensor"

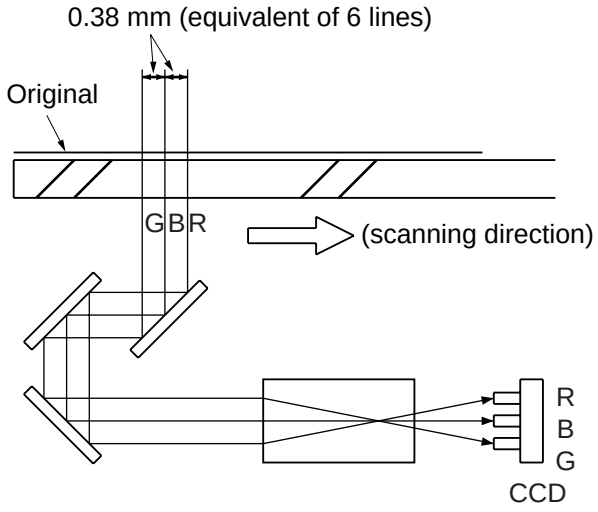

Figure 4-403

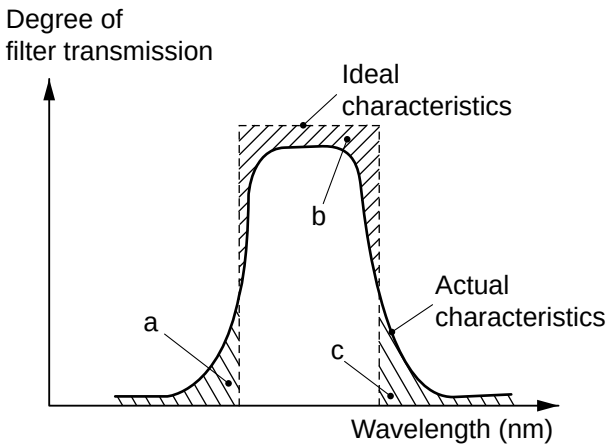

Figure 4-404

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E. Original Position Detection Circuit

The original position detection circuit is used to find out the size and position of an original on the copyboard. It identifies an original as being a rectangle (or a square) possessing coordinates X1/Y1 and X2/Y2 found on the ends of a diagonal line.

Volume 4>Chapter 4>IV-F “Detecting the Position of an Original”

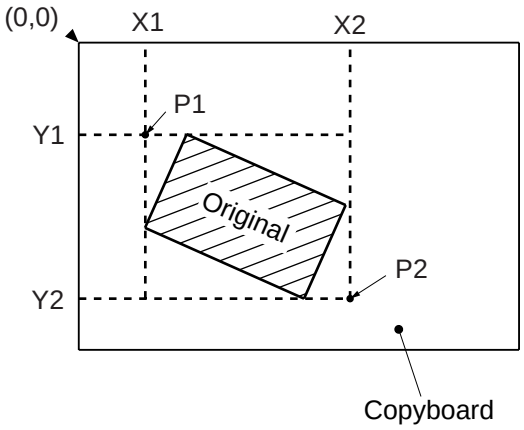

Figure 4-405

Caution:
If an RDF is installed, the position of an original placed on the copyboard glass cannot be checked.

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F. Black Detection Circuit and Edge/Line Width Detection Circuit

The black detection and edge/line width detection circuits perform the following image processing using RGR signals:

1. Black Detection
   Identifies the color of the pixel in question, and generates its color code.
2. Edge Detection
   Detects whether the pixel in question is the edge of an input image or not.
3. Line Width Detection
   Detects the width of the line forming the edge of an input image.

Volume 4>Chapter 4>IV-G “Black Detection”

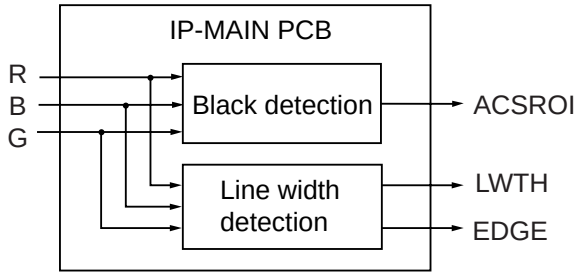

Figure 4-406

Reference:

1. Black detection (ACS) is performed using the black detection signal (ACSROI) generated during pre-scanning.
2. The black detection signal (ACSROI), edge signal (EDGE), and line width signal (LWTH) from the black detection circuit and edge/line width detection circuit are used to generate UCR signals and to detect black characters, determine the level of sharpness processing, and to identify black originals (ACS).

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G. Chromatic Space Correction Circuit

The chromatic space correction circuit is used to improve on the reproduction of color for the printer unit.

The range of color reproduction for photo and computer-generated images is wider than the range of color reproduction possible by the printer unit, leading to discrepancies in gradation between the original and its output image. (The data falling outside the color reproduction range of the printer unit is not reproduced faithfully.)

To compensate for such discrepancies, the copier is designed to identify the chromatic space (hue, brightness, and saturation) of the original from the RGB data it reads during pre-scanning, and converts the result into data that fits the range of color reproduction offered by its printer unit, thereby enabling faithful reproduction of the original.

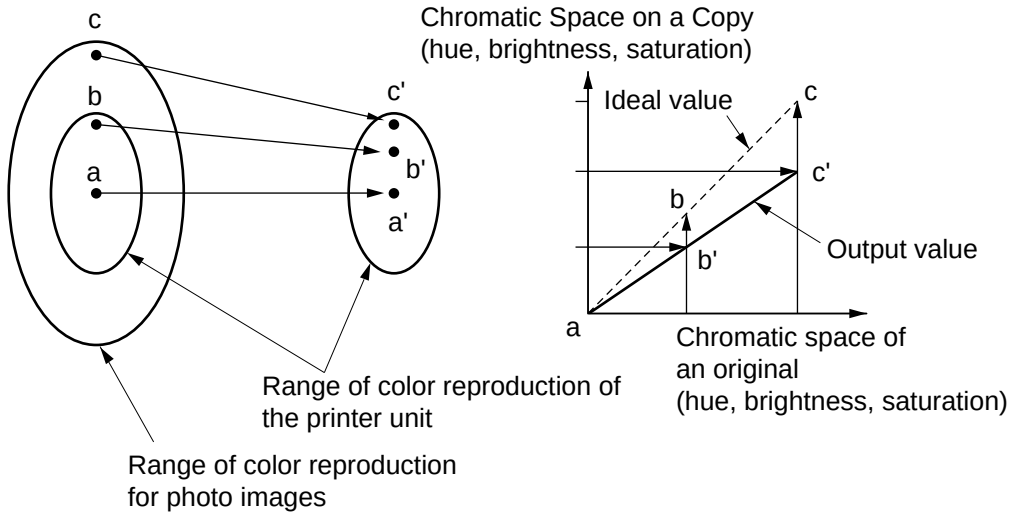

Figure 4-407

H. Direct Mapping Circuit

The direct mapping circuit is deigned to improve reproduction of intermediate colors (e.g., tone of the skin).

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I. Logarithmic Correction and BGR-to-YMC Conversion

a. Logarithmic Correction

The output of the CCD possesses linear characteristics in relation to the intensity of light reflected by an original. The density as perceived by the eye, however, does not necessarily have linear characteristics.

To compensate for the discrepancy, the copier performs level conversion as shown in Figure 4-408.

b. BGR-to-YMC Conversion

The intensity of light passing through each of the filters (B, G, R) of the CCD and the density of (Y, M, C) of an original are in a complementary relationship, enabling level conversion (B to Y, G to M, R to C) as shown in Figure 4-409 and generation of Y, M, and C signals.

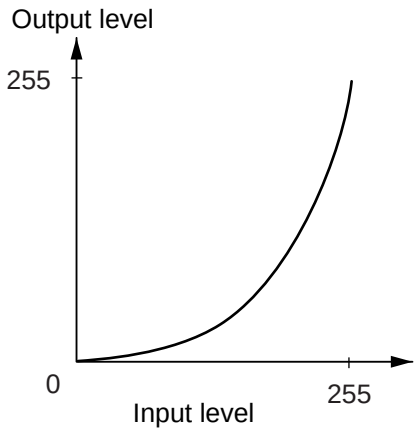

Figure 4-408 Logarithmic Correction

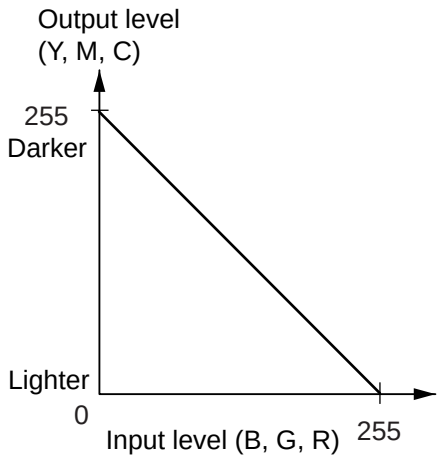

Figure 4-409 BGR-to-YMC Conversion

J. Toner Color Correction Circuit

Ideally, each color toner should absorb 100% of light of specific wavelengths and reflect light of all other wavelengths. In reality, however, areas indicated by a, b, and c in Figure 4-410 exist, requiring color correction on reflection characteristics by a color correction circuit.

The Bk signal is generated from the UCR signal while correction takes place.

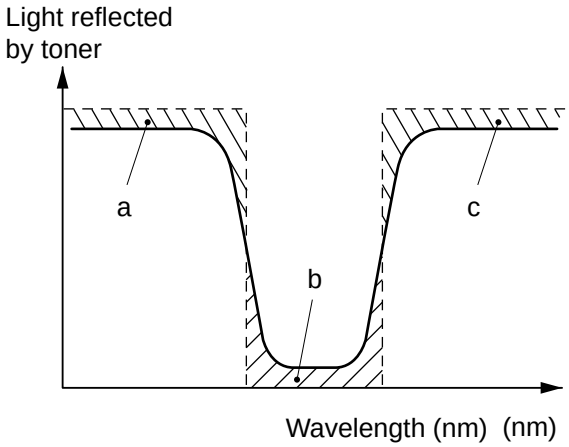

Figure 4-410

K. Coloring/Contour Processing

In the coloring/outline processing block, image data is processed/edited according to instructions on specific colors or areas selected on the control panel or the editor. A selected area is divided into a text area and a background area (area without image data), and the text area is further divided by the IP-ED PCB into a character body area, character contour area, and shadow area, each of which is subjected to the following image data processing/editing.

1. Paint
   The area is filled with the selected color.
2. User Color
   The image data of the selected area is converted into data of the selected color.
3. Gradation
   The selected area is colored by varying the ratio of composition of two selected colors.
4. Color Filter
   The selected area is colored by modifying the image data using the data of a selected color at a default ratio of composition.

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L. Density Processing

The correction curve used for density processing is varied according to the following parameters:

a. Setting of the Copy Density key on the control panel
b. Color balance selected on the control panel
c. Color balance selected in service mode (ADJUST>COLOR>ADJ-Y, ADJ-M, ADJ-C, ADJ-K)
d. Light area offset setting selected in service mode (ADJUST>COLOR>OFST-Y, OFST-M, OFST-C, OFST-K)
e. Text/photo mode selection

In keeping with items a through c above, a “dark” curve or “light” curve shown in Figure 4-11 is selected. For mono black character mode, however, the curve will be as shown in Figure 4-412.

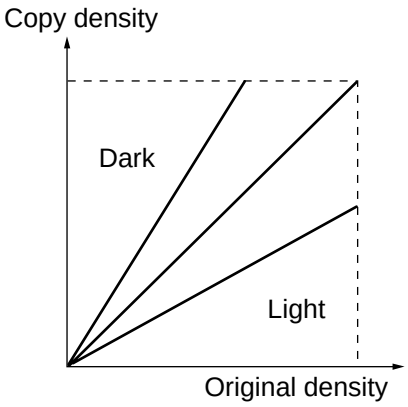

Figure 4-411

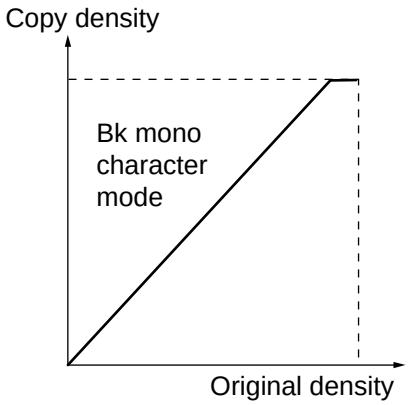

Figure 4-412

M. Enlargement/Reduction, Shift, and Edit Processing

When wiring to and reading from memory, image data is processed for the following:

📖 Volume 4>Chapter 4>IV-N “Enlargement/Reduction, Shift, and Edit Processing”

1. Enlargement/Reduction
   a. Horizontal reproduction ratio (main scanning direction)
   b. Vertical reproduction ratio (sub scanning direction)
2. Density Processing for Enlargement Correction

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3. Shift
   a. Center
   b. Left/right bind
   c. Free shift
4. Mirror Image
5. Image Repeat

N. Sharpness/Filter Processing

Sharpness/filter processing is arithmetic processing performed to generate sharp or soft images according to the settings selected on the control panel (copying mode, sharpness strong/weak).

When “sharpness weak” is selected, the changes in image density are evened out to produce “soft” images.

When “sharpness strong” is selected, the changes in image density are emphasized to produce sharp images.

🕮 Volume 4>Chapter >IV-M “Sharpness/Filter Processing”

O. Anti-Counterfeit Mechanism

The copier is equipped with the following two mechanisms to prevent the production of counterfeit bank notes and certificates:

1. Counterfeit Tracing Mechanism

The ID number stored in the copier is printed on all copies. The number is not visible to the eye, and any copy of a bank note or certificate can be traced to the copier used to make it.

2. Bank Note Detection Mechanism

- If the copier identifies an original as being one of the bank notes stored in its memory, it turns out all output as solid black copies.
- If the copier finds out that a bank note has been inserted during continuous copying mode, it will stop operation.
- If the copier identifies the original as being one of the bank notes stored in its memory, it will not generate video signals otherwise generated and sent to an IPU or controller devices.

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P. CMYBk/RGB Integration

The CMYBk integration block and the RGB integration block perform the following processing according to the instructions entered on the control panel or the editor:

- Transparency synthesis
- Gradation processing

The YMCK or RGB image data from an external device (IPU) and the CMYBk or RGB image data read by the scanner unit are integrated according to the ratio of composition selected on the control panel or the editor.

Q. Texture Processing

The image data read during pre-scanning is stored in memory for reading at time of image processing according to the instructions from the control panel.

R. Color Conversion

The color conversion block performs the following processing according to the instructions from the control panel or the editor.

- Color conversion
- Posterization
- Solarization

The color conversion block coverts RGB data into chromatic data (hue, brightness, saturatoin) for the above processing on chromatic space data, and the resulting chromatic space data is converted into RGB data and sent to the next step.

If images read by the scanner unit is to be sent to an external device, the color conversion block sends them in the form of RGB data.

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V. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (**Do not insert a screwdriver or the like into the laser path.**)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum.
   The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Electrical Parts

1. Removing the CCD Unit

1) Disconnect the power plug.
2) Remove the copyboard glass.
3) Remove the four screws [1], and detach the lens mount cover [2].

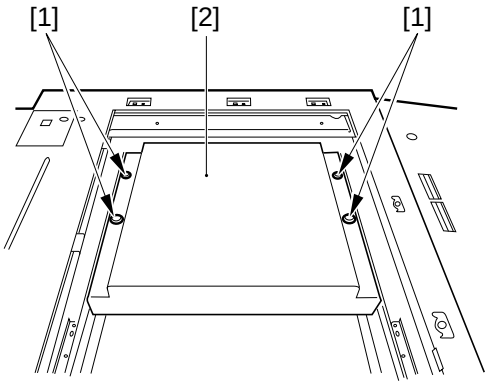

Figure 4-501

4) Remove the nine screws [3], and detach the laser unit cover (front) [4]. (200V model only)
5) Remove the two screws [5], and detach the laser unit cover (rear) [6]. (200V model only)

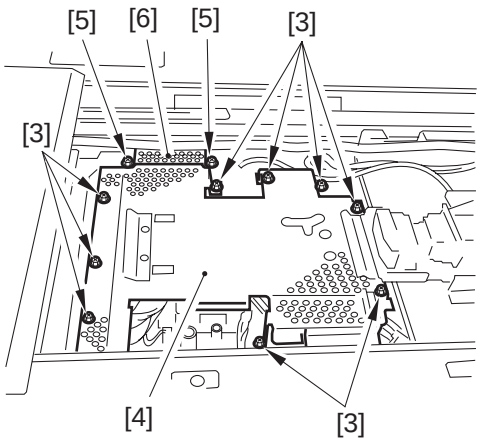

Figure 4-502

6) Remove the two screws [7], and detach the two CCD unit retaining spring [8].
7) Remove the grounding plate [9].

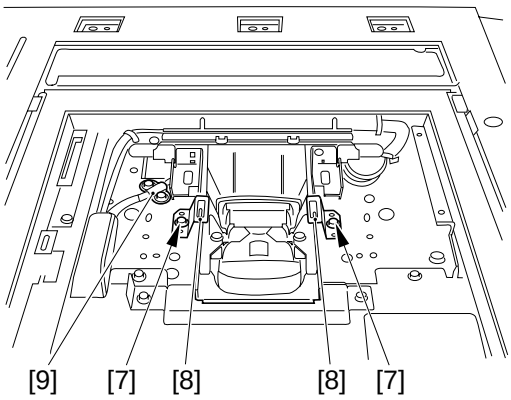

Figure 4-503

8) Lift the CCD unit, and disconnect the two connectors [10].

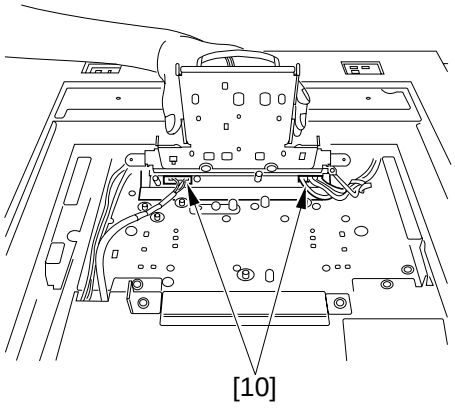

Figure 4-504

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2. Removing the Analog Processor PCB

1) Remove the copyboard glass, and detach the lens mount cover.
2) Remove the laser unit cover (front) and the laser unit cover (rear). (200V model only)
3) Remove the two screws [1], and detach the auxiliary cover [2].
4) Remove the four screws [3], and detach the laser scanner cover [4].

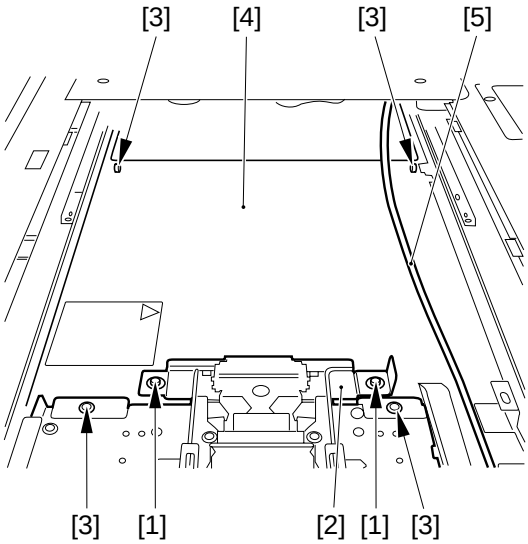

Figure 4-505

Caution:
Move the mirror mount fully to the left. Take care not to damage the power supply line [5] of the scanning lamp.

5) Remove the two screws [6], and detach the IP upper cover [7].

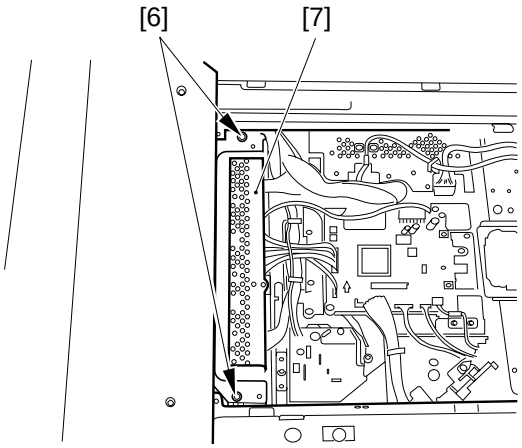

Figure 4-506

6) Remove the two screws [8], and detach the harness retainer [9].
7) Disconnect the connector [10] from the IP motherboard.
8) Remove the three screws [11], and disconnect the three connectors [12]; then, detach the analog processor PCB [13].

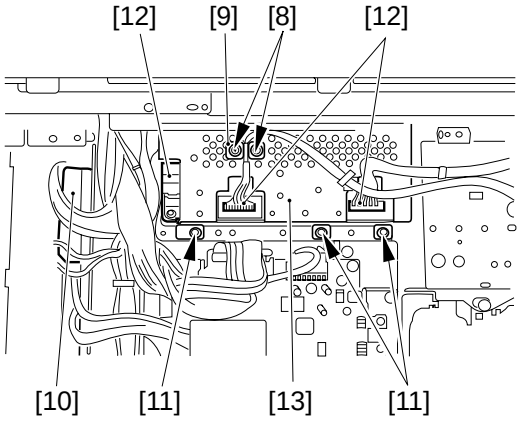

Figure 4-507

Caution:
Take care not to trap the flat cable from the image processor PCB between the base plate and the analog processor PCB.

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3. Removing the Image Processor PCB (IP-MAIN, IP-ED, IF, IP-ECO)

1) Remove the delivery upper cover.
2) Remove the two screws [1], and detach the image processor PCB cover [2].

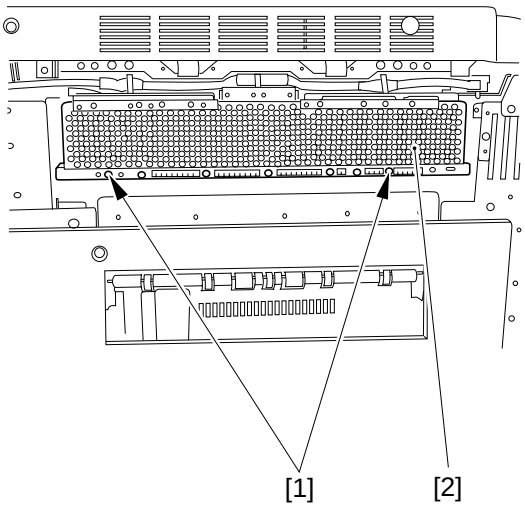

Figure 4-508

3) If the IP-ED or IF PCB is installed, remove the two screws [3] and detach the interface harness trainer [4]. (You need not perform this step when removing the IP-ECO.)
4) Remove the two screws from both ends of each PCB; then, shift up the levers on both ends to detach the image processor PCB.

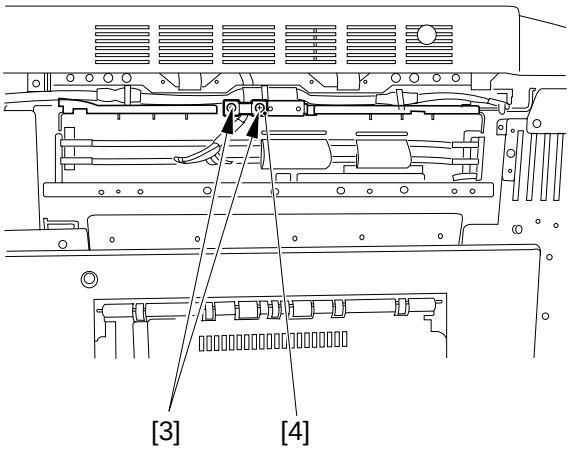

Figure 4-509

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CHAPTER 5

LASER EXPOSURE SYSTEM

This chapter explains the operations and functions of the copier's laser exposure system, and provides an outline of the timing at which various associated parts are driven.

I. OPERATIONS 5-1
A. Functions 5-1
B. Sequence of Operations (laser exposure system) 5-2
II. GENERATING THE BD SIGNAL 5-3
III. LASER DRIVER CIRCUIT 5-4
A. Controlling the Laser System 5-4
B. Controlling the Temperature of the Laser Unit 5-5
IV. LASER SCANNER MOTOR 5-6
V. DISASSEMBLY/ASSEMBLY 5-7
A. Electrical Parts 5-8

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I. OPERATIONS

A. Functions

The major parts and functions of the laser exposure system are as follows:

Major parts	Descriptions
Laser semiconductor	Visible light (670 nm)
Laser scanner motor (M3)	Brushless DC motor
BD mirror/BD PCB	Laser detection/BD signal generation
Laser controller PCB	Laser emission timing and video signal control
Laser driver PCB	Laser emission control
Laser scanner motor driver PCB	Laser scanner motor rotation control

Figure 5-101

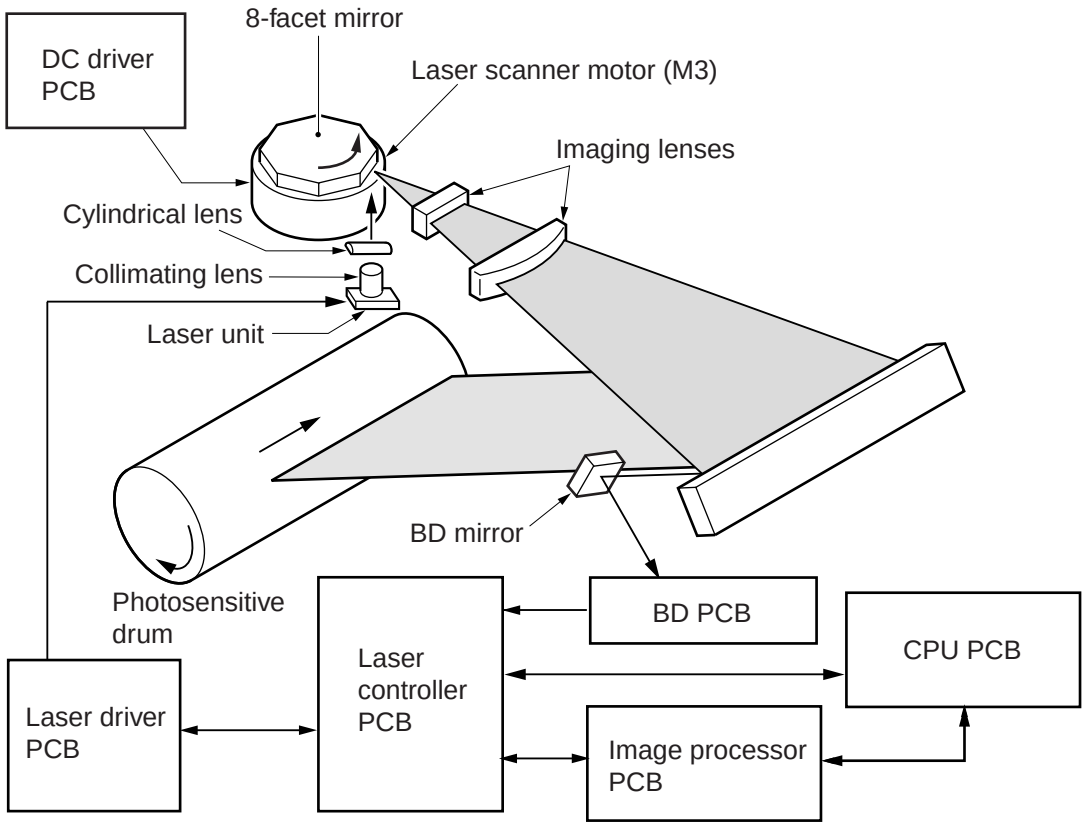

Figure 5-101

The major items of control and functions of the laser exposure system are as follows:

1. Laser Exposure System Control
   Optimum intensity control to suit the surface potential of the drum
2. Laser Scanning Method
   Beam spot scanning
3. Synchronization Control
   By the BD signal in main scanning direction
   By the ITOP signal in sub scanning direction
4. Laser Scanner Control
   Constant rotation speed

B. Sequence of Operations (laser exposure system)

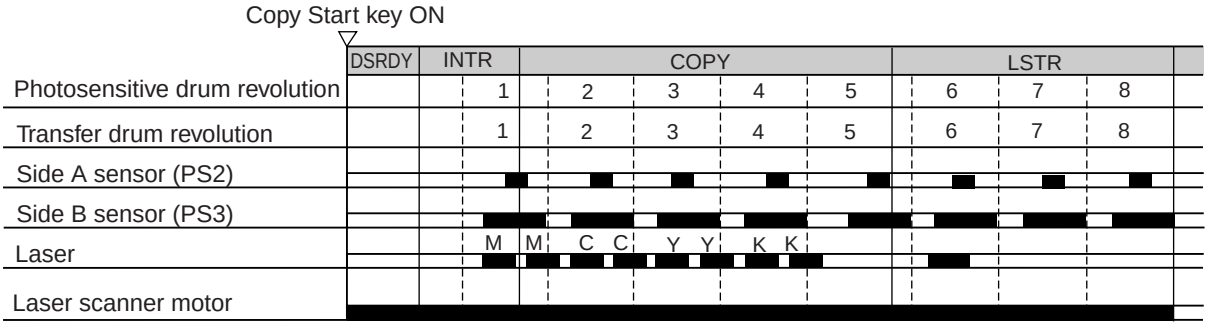

Figure 5-102 A4/LTR, 2 Copies, Full Color, Direct, Cassette 1

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II. GENERATING THE BD SIGNAL

The BD signal is used to enable synchronization in main scanning direction, and it is generated by the BD PCB based on the laser beam reflected by the BD mirror found in the optical path.

The BD signal is used to send video signals from the image processor PCB to the laser controller PCB. The laser controller PCB is designed to correct video signals, and the laser driver PCB is used to send out video signals as laser intensity control signals in sequence.

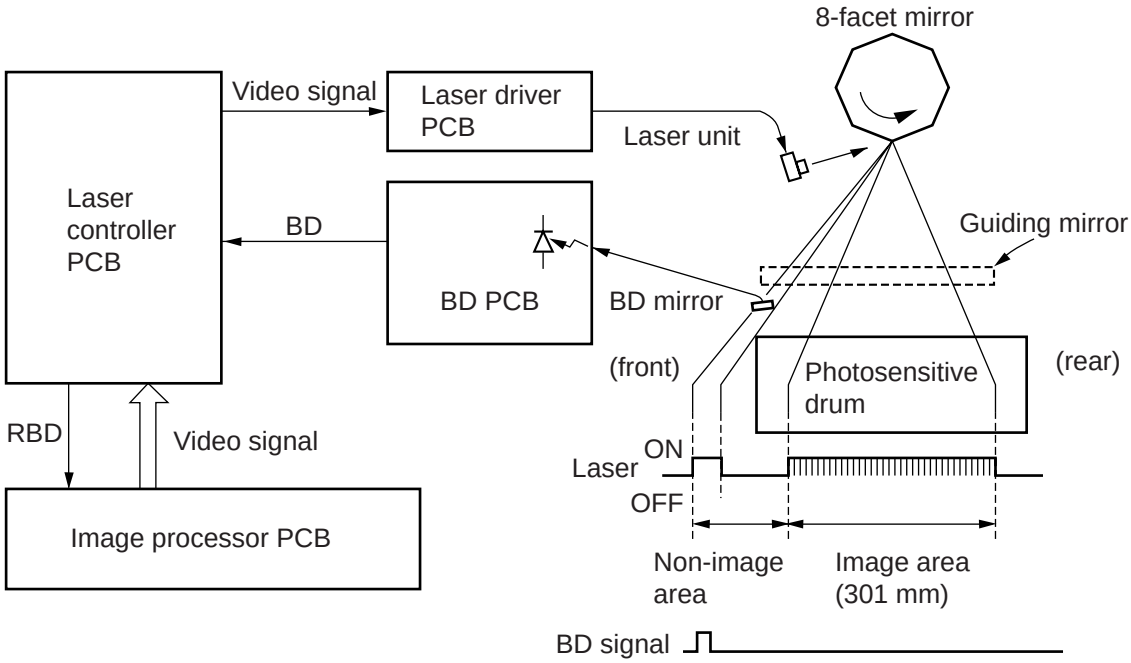

Figure 5-201

Related Error Code
E100
The BD signal is not detected within a specific period of time.

III. LASER DRIVER CIRCUIT

A. Controlling the Laser System

The laser driver circuit converts video signals (VD0 to VD7) into laser intensity control signals used to drive the semiconductor laser.

The laser driver circuit has the following functions:

1. Controlling laser emission.
2. Controlling the laser intensity (APC control).
3. Switching laser outputs.

Each of the signals has the following function:

1. PH/TX/h200 (switch signal to suit copying mode)
   Serves to switch resolutions in main scanning direction (i.e., to suit text output or photo output; in sub scanning direction, it is fixed to 400 dpi).
2. PVE (sync signal)
   Serves as the sync signal when transmitting video signals.
3. 400* Signal
   Serves to select 400 dpi when '1'.

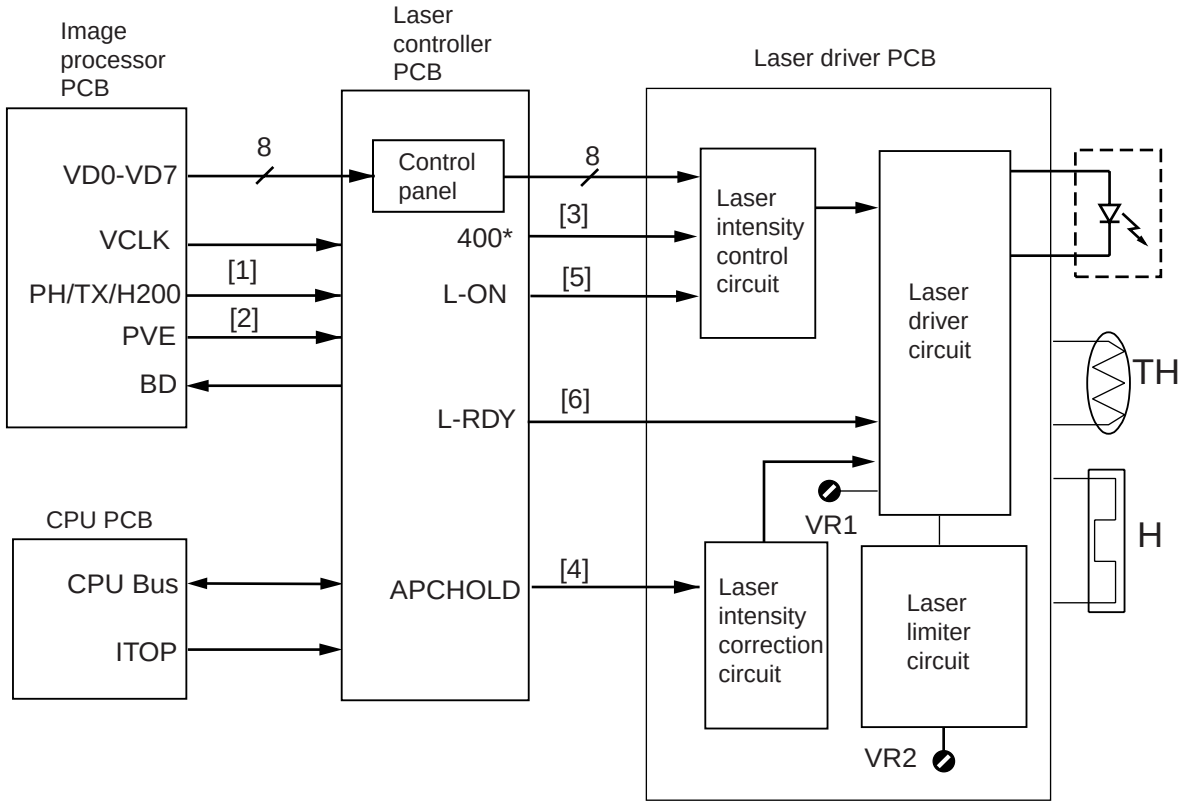

Figure 5-301

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4. APCHOLD (auto output control signal)
   Serves as a control signal used to stabilize the output of the laser.
5. L-ON (laser activation signal)
   Serves to turn on the laser at full intensity; it is '1' (laser on) only during laser power adjustment or during beam detection.
6. L-RDY (laser emission ready signal)
   Serves to indicate the state of the laser; it is '0' when the laser is on, and is '1' when the laser is off.

For VR2, see the instructions on how to adjust laser power under II.B.2 "Adjusting Laser Power" in Chapter 13.

Reference:

When printing a test pattern in service mode, the output command from the CPU PCB causes the laser controller PCB to form the appropriate test pattern for output.

B. Controlling the Temperature of the Laser Unit

The temperature of the laser unit is controlled to ensure a stable laser intensity.

A thermistor and a heater are mounted inside the laser unit so as to control the temperature to a specific level.

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IV. LASER SCANNER MOTOR

The laser scanner motor (M3) starts to rotate at a specific speed when the DC driver PCB causes the laser scanner motor drive signal (LSMON) to go '0'.

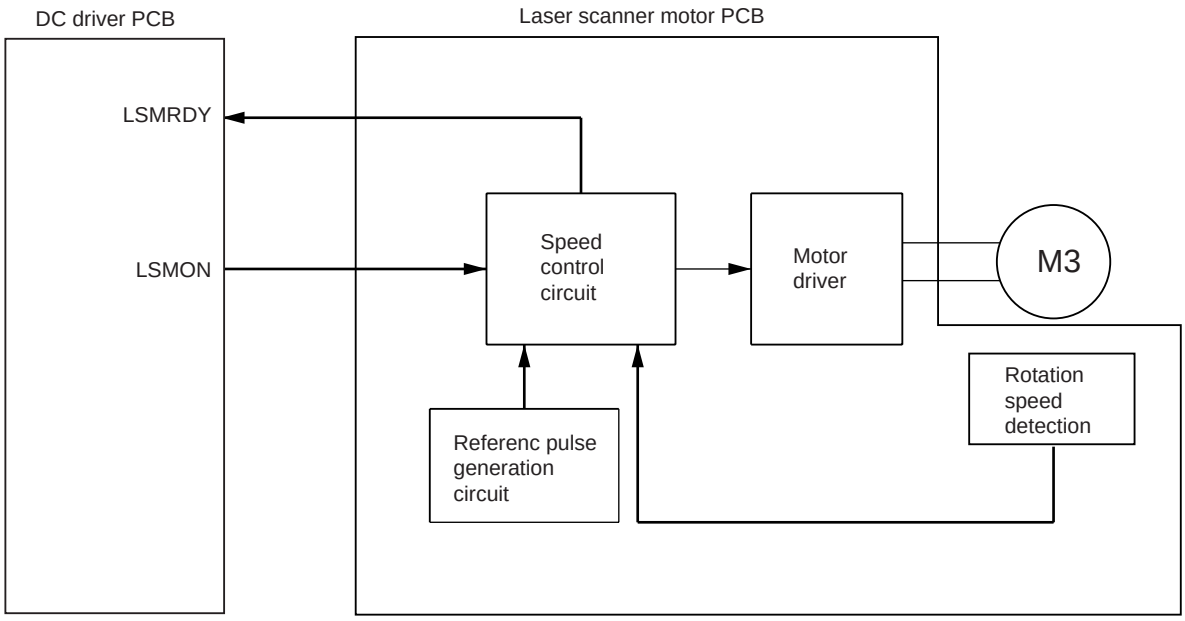

Figure 5-01

Related Error Code
E110
If an error causes the rotation speed of the motor to deviate, the laser scanner motor ready signal (LSMRDY) goes '0', causing the copier to indicate the code.

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V. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (Do not insert a screwdriver or the like into the laser path.)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum. The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Electrical Parts

1. Removing the Original Scanner Motor Driver PCB

1) Remove the copyboard glass, and detach the lens mount cover.
2) Remove the laser scanner cover. (See the instructions on how to remove the analog processor PCB.)
3) Remove the nine screws [1], and detach the laser unit cover (front) [2]. (200V model only)
4) Remove the two screws [3], and detach the laser unit cover (rear) [4]. (200V model only)

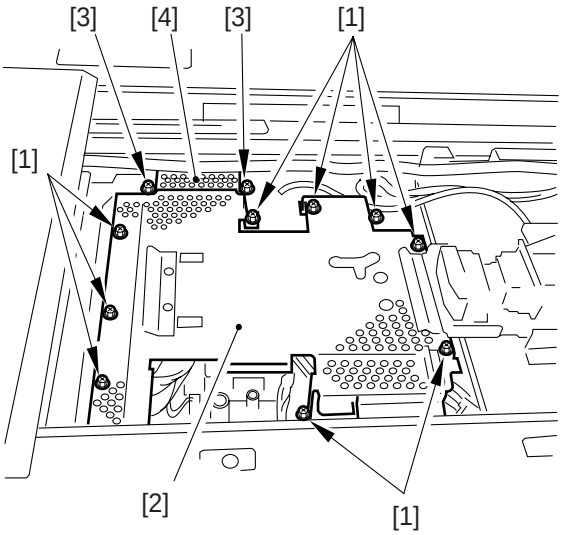

Figure 5-501

5) Remove the CCD unit.
6) Disconnect the three connectors [5], and remove the two screws [6]; then, detach the original scanner motor driver PCB [7].

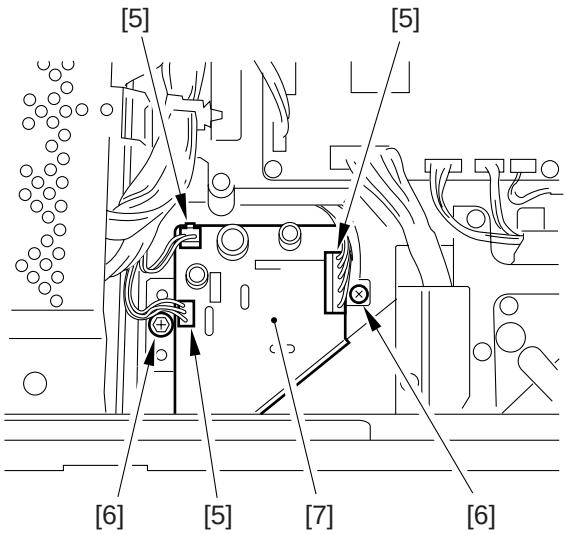

Figure 5-502

2. Removing the Laser Scanner Unit

1) Remove the copyboard glass, and detach the lens mount cover.
2) Remove the laser scanner cover.
3) Remove the laser unit cover and the laser unit upper cover.

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4) Remove the CCD unit.
5) Disconnect the connector [1] from the original scanner motor driver.

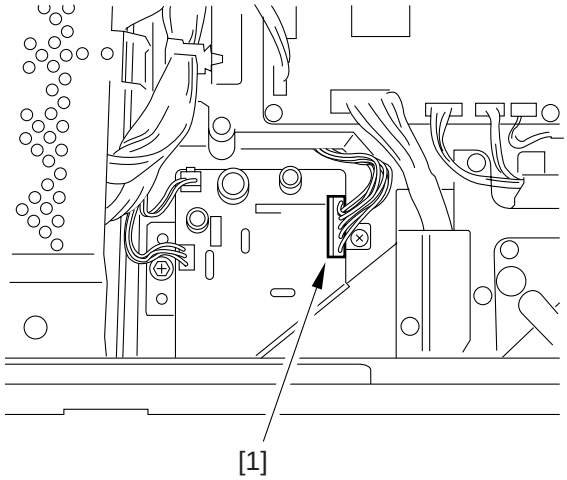

Figure 5-503

6) Disconnect the five connectors [2], and remove the two screws [3]; then, remove the metal fixing [4].

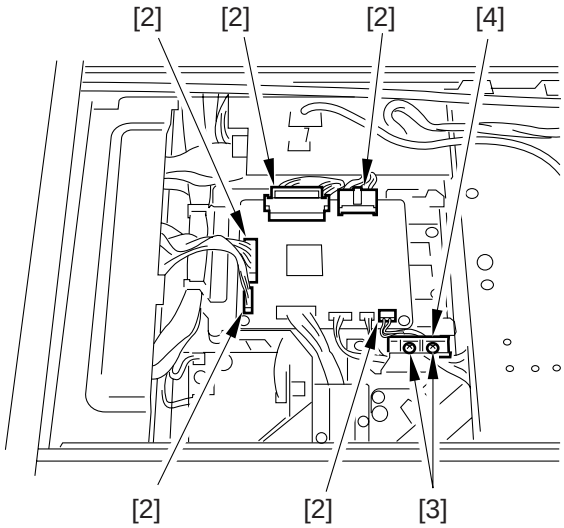

Figure 5-504

7) Remove the four screws [5] (M4x12), and detach the laser scanner unit [6].
Figure 5-505

Caution:
When replacing the laser scanner unit, hold it by its metal area or die-cast member; do not touch the laser driver PCB or the lens assembly.
When replacing the laser driver PCB, further, take care never to touch any of the elements.

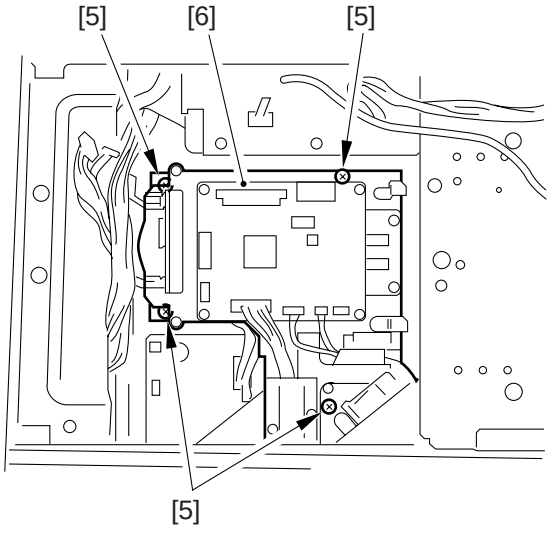

Figure 5-505

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3. Removing the Laser Controller PCB/Laser Driver PCB

Caution:
The laser controller PCB and the laser driver PCB are adjusted to a high accuracy at the factory. If they must be replaced in the field, be sure to replace them as a pair.

1) Remove the laser scanner unit from the copier.
2) Disconnect the three connectors [1], and remove the six screws [2]; then, detach the laser controller PCB [3].

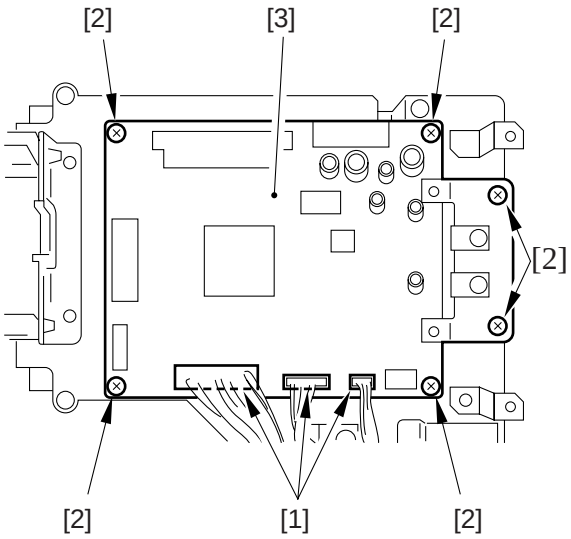

Figure 5-506

3) Remove the four screws [4], and detach the laser driver upper cover [5].

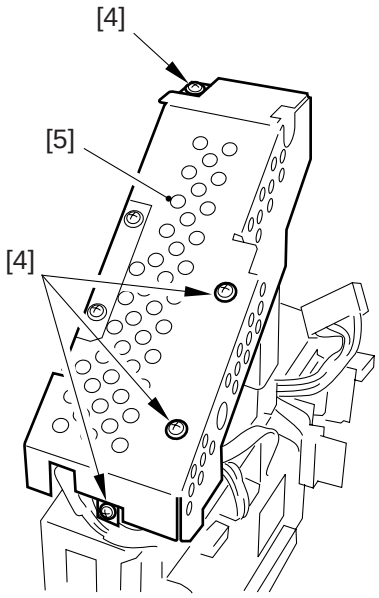

Figure 5-507

4) Disconnect the four connectors [6], and remove the five screws [7]; then, detach the laser driver lower cover [8].

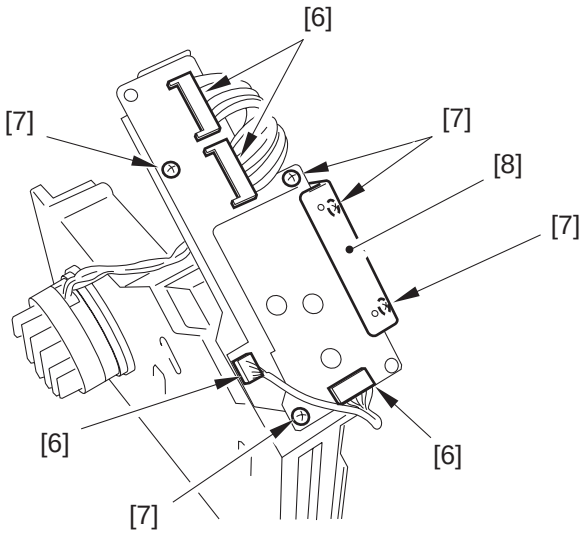

Figure 5-508

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5) Remove the three screws [9], and detach the laser driver PCB [10].

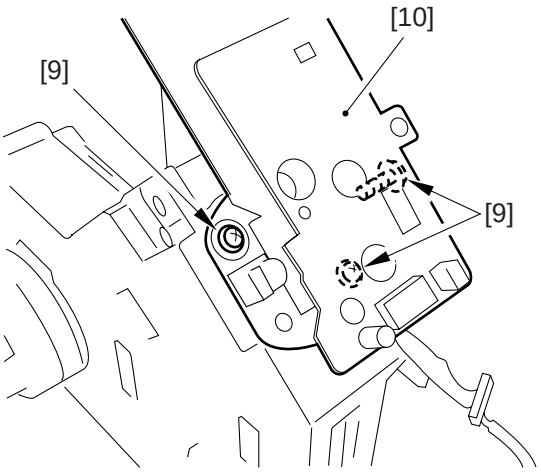

Figure 5-509

Caution:
When handling the laser driver PCB, be sure to hold it as shown, and never touch any of the elements on the PCB. Take special care not to touch the pins of the laser; otherwise, you can damage the laser by static electricity.

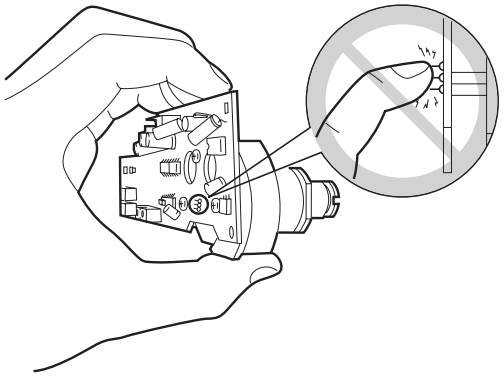

Figure 5-510

4. Adjusting Laser Power

If you have replaced the laser scanner unit, laser driver PCB, or laser controller PCB, enter the values recorded on the label that comes with the PCB in service mode (ADJUST>LASER). Attach the label behind the right front cover.

If the output of the laser has decreased, perform the following:

Tools Needed

- Laser power checker (FY9-4013)
- Digital multimeter (CK-0436)

Caution:
Be sure to check the values recorded on the label attached behind the right front cover.

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1) Turn off the power switch.
2) Remove the copyboard glass, and detach the lens mount cover.
3) Remove the laser scanner cover.
4) Turn on the power switch.
5) Open the left front cover. (Be sure that the left front cover will not close.)
6) Remove the four screws [1], and detach the left inside cover [2].

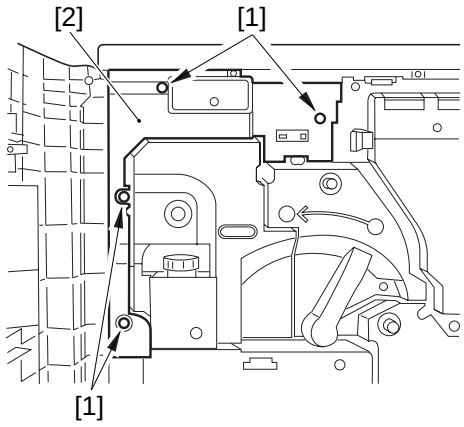

Figure 5-511

7) Remove the screw [3], and detach the laser power checker slot cover [4].

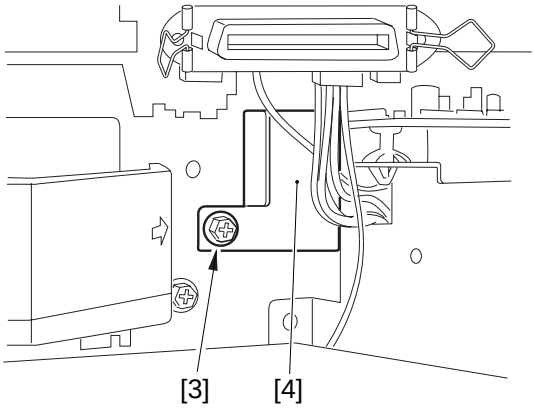

Figure 5-512

8) Shift the laser power checker switch to '2'.
9) Holding the laser power check [5] so that its light-receiving face is to the right, insert it into the slot [6].
10) Insert the lead wire of the laser power check into the digital multimeter, set the range to 200 mVDC.
11) Select ADJUST>LASER>POWER in service mode, and press the OK key (laser on).
12) Check the reading of the digital multimeter.

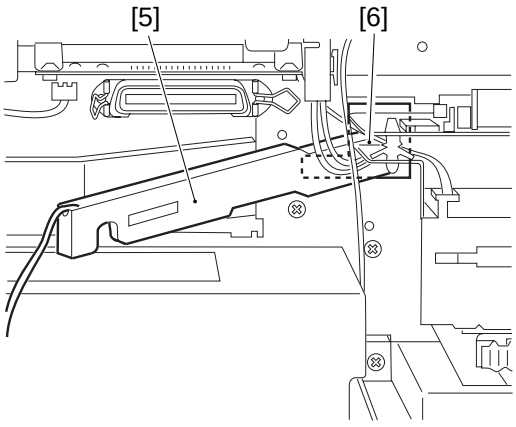

Figure 5-513

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13) Compare the reading and the value (Pmax) recorded on the label. If different, turn VR2 [7] on the laser driver PCB so that the reading and the recorded value are identical.

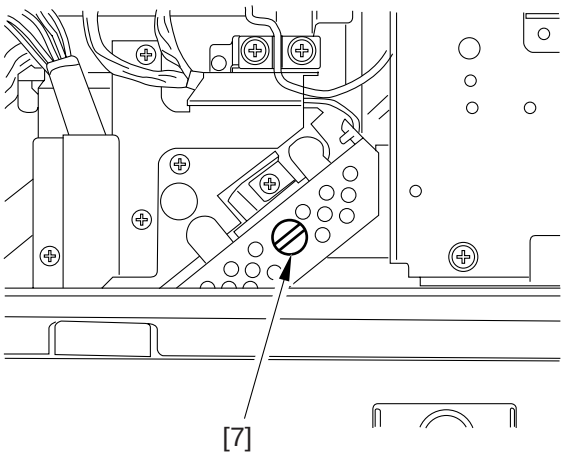

Figure 5-514

Caution:

1. While watching the reading of the laser power checker, turn VR2 gradually, taking care not to increase the power in excess. (Turning VR2 counterclockwise reduces the laser output.)
2. The laser diode is vulnerable. Be sure NOT to exceed the value recorded on the label.
3. Take care NOT to press the Copy Start key while making adjustments using VR2.

14) Press the Stop key to stop the laser output.
15) Perform laser adjustments.

5. Adjusting the Laser

Caution:

Be sure to adjust laser power before starting to adjust the laser.

1) Select ADJUST>LASER in service mode.

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2) Select T-V00, enter '255', and press the ON key.
3) Select T-V00-ON, and press the OK key (so as to turn on the laser). Record the value (offset value) indicated. To stop the laser output, press the Stop key.
4) Select T-V00, and adjust its value so that it is as shown:
   offset value + (0.15 to 0.20 mV)
5) Likewise, adjust the following according to their respective values recorded on the label: T-VFF, P3-V00, P3-VFF-1, P3-VFF-2, P3-VFF-3, P3-VFF-4.
   To stop the laser output, press the Stop key.
   Use the following as a guide to standard values:

Item	Standard	Laser ON key
T-V00	Offset Value + (0.15 to 0.20)	T-V00-ON
T-VFF	Pmax x 70%	T-VFF-ON
P3-V00	Offset value + (0.1 to 0.15)	P3V00-ON
P3-VFF-1	Pmax x 45%	P3-V1-ON
P3-VFF-2	Pmax x 55%	P3-V2-ON
P3-VFF-3	Pmax x 65%	P3-V3-ON
P3-VFF-4	Value on label x 70%	P3-V4-ON

6) Press the Reset key to end service mode.
7) Turn off the power switch.
8) Detach the laser power checker, and fit the cover to the slot.
9) Mount the left inside cover.

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CHAPTER 6

IMAGE FORMATION SYSTEM

This chapter explains the operations and functions of the copier's image processing mechanisms and the relationship between electrical and mechanical systems, and provides an outline of the timing at which various associated parts are driven.

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I. IMAGE FORMATION SYSTEM

A. Outline

The major functions of the image formation system are as follows:

Item	Description
Drum surface potential control	1. Setting the voltage of the primary charging assembly grid bias. 2. Setting the voltage of the developing bias (Vg). 3. Measuring the dark area attenuation potential.
Primary charging assembly grid bias control	Using DC constant voltage control (setting by potential control).
Developing bias control	Using AC constant voltage control (on/off control). Using DC constant voltage control (setting by potential control).
Primary current control	Using DC constant current control (on/off control).
Attraction current control	Using DC constant current control (on/off control). Using current level control (setting by paper type/ environment sensor).
Transfer current control	Using DC constant current control (on/off control). Using current level control (setting by paper type/ environment sensor).
Separation current control	Using AC voltage level control (setting paper type/ environment sensor). Using DC current level control (setting by paper type/ environment sensor).
Internal/external static eliminating current control	Using DC constant current control (on/off control). Using DC current level control (setting by paper type/ environment sensor). Using AC constant voltage control (on/off control).
Post-cleaning current control	Using DC constant current control (on/off control). Using current level control (setting by paper type/ environment sensor).
Photosensitive drum temperature control	Using heater control : reference temperature 41ºC
Pre-exposure control	Using a fuse lamp (12 pc.; on/off control).
Developing assembly engagement control	Controlling the mechanism to lock a developing assembly against the photosensitive drum.
Color toner density control	Measuring the concentration of toner inside the color developing assembly, and issuing a supply command.
Black toner concentration control	Measuring the concentration of toner (Y,M,C,Bk), and issuing a supply command.
Toner supply control	Controlling supply of toner from the hopper.
Waste toner collection control	Detecting a waste toner case full condition. Detecting a waste toner feedscrew lock condition

Table 6-101

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Figure 6-101 shows the components of the image formation system.

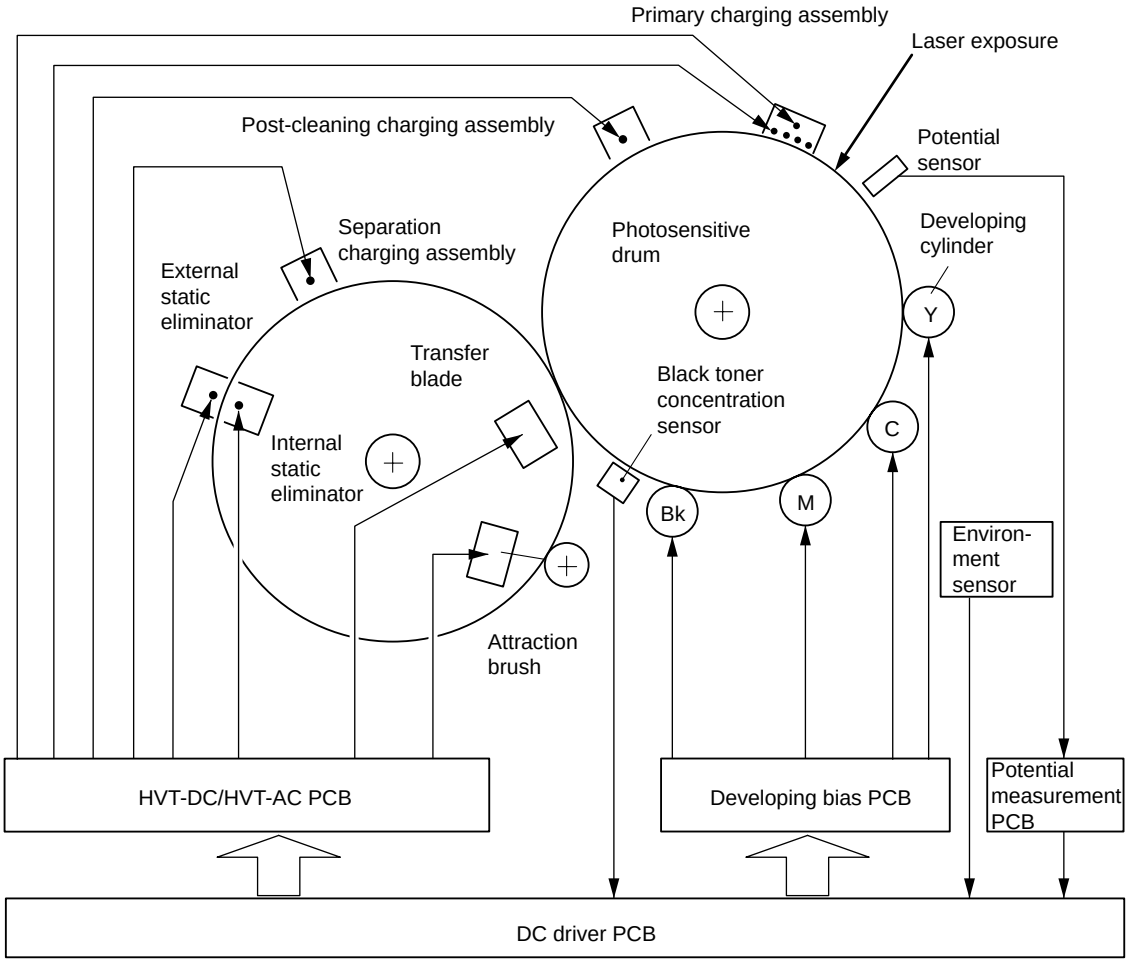

Figure 6-101

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B. Controlling the C Sensor

The copier is equipped with a C sensor (PS4) to control the timing at which the transfer output and internal/external static eliminator output is generated, thereby enabling increases in copying speed.

The sensor is found inside the transfer drum, and is used to control the timing of high-voltage output in relation to the position of copy paper.

The relationship between the C sensor and the signal plate is as follows:

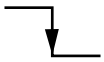
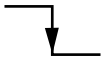
Signal plate	Signal state	Description
Signal plate C		Turns on the side B internal/external static eliminator high-voltage output.
		Tuns on the side A transfer high-voltage output.
Signal plate D		Turns on the side A internal/external static eliminator high-voltage output.
		Turns on the side B transfer high-voltage output.

Table 6-102

a. State of the Transfer Drum and the Signal Plate D

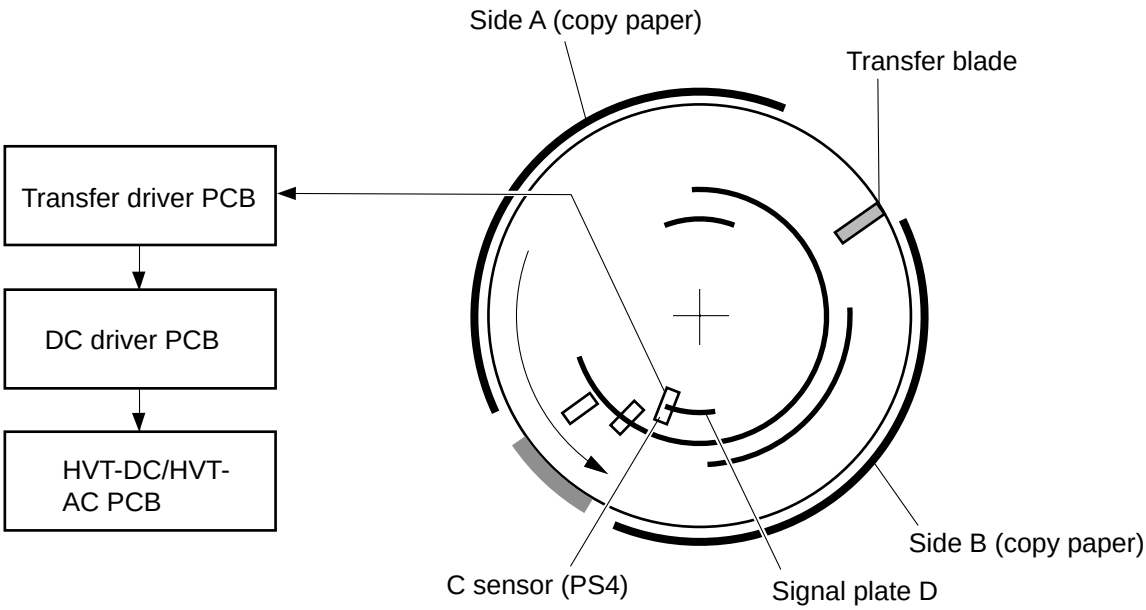


Figure 6-102 Turning On the Transfer High Voltage by the Signal Plate D

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b. State of the Transfer Drum and the Signal Plate C

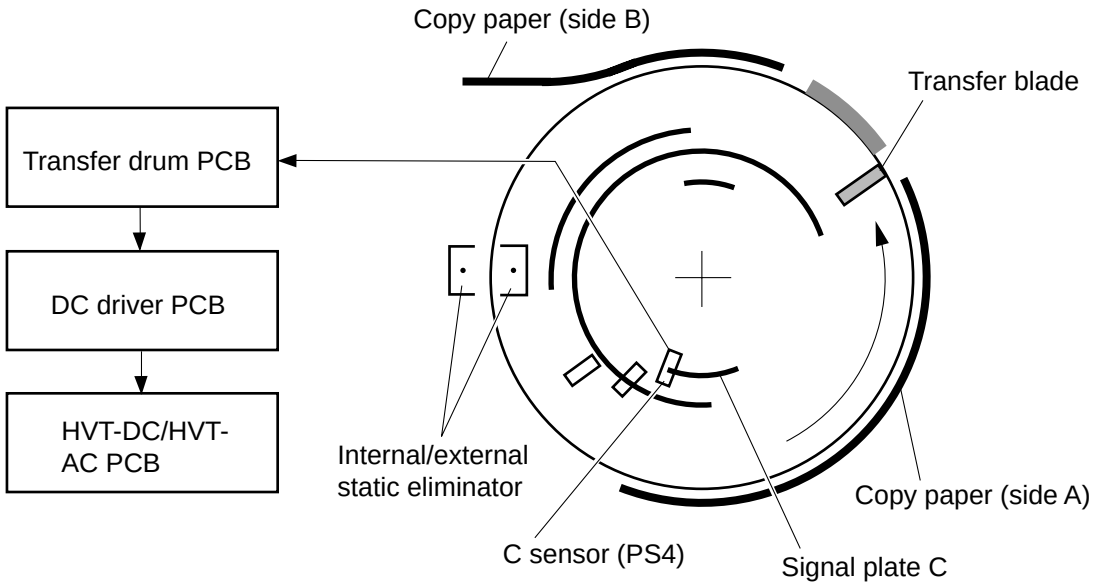

Figure 6-103

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Related Error Code

E071: ITOP sensor error

Detail code	Error description
F000	The signal from the sensor is not detected for 10 sec after the start of transfer drum engagement.
0001	The sequence of signals (falling edge) from the signal plate detected by the side B sensor is not correct.
0002	The sequence of signals (rising edge) from the signal plate detected by the side B sensor is wrong.
0003	The sequence of signals of the SP-C (rising edge) detected by the C sensor is wrong.
0004	The sequence of signals of the SP-C (falling edge) detected by the C sensor is wrong.
0005	The sequence of signals (rising edge) from the signal plate detected by the side A sensor is wrong.
0006	The sequence of signals (falling edge) of the signal plate detected by the side A sensor is wrong.
0007	The sequence of signals of the SP-D (rising edge) detected by the C sensor is wrong.
0008	The sequence of signals of the SP-D (falling edge) detected by the C sensor is wrong.
1001	The signal (falling edge) of the side B sensor is not generated after the signal of the SP-D (falling edge) has been generated.
1002	The signal (rising edge) of the side B sensor is not generated after the signal of the SP-C (rising edge) has been generated.
1003	The signal of the SP-C (rising edge) is not generated after the signal of the side B sensor (falling edge) has been generated.
1004	The signal of the SP-C (falling edge) is not generated after the signal of the side B sensor (rising edge) has been generated.
1005	The signal of the side A sensor (rising edge) is not generated after the signal of the SP-C (falling edge) has been generated.
1006	The signal of the side A sensor (falling edge) is not generated after the signal of the SP-D (rising edge) has been generated.
1007	The signal of the SP-D (rising edge) is not generated after the signal of the side A sensor (rising edge) has been generated.
1008	The signal of the SP-D is not generated (rising edge) after the signal of the side A sensor (falling edge) has been generated.
1101	The signal of the side B sensor (falling edge) is generated 0.3 sec earlier than normal after the signal of the SP-D (falling edge) has been generated.

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E071: ITOP sensor error

Detail code	Error description
1102	The signal of the side B sensor (rising edge) is generated 0.3 sec earlier than normal after the signal of the SP-C (rising edge) has been generated.
1103	The signal of the SP-C (rising edge) is generated 0.3 sec earlier than normal after the signal of the side B sensor (falling edge) has been generated.
1104	The signal of the SP-C (falling edge) is generated 0.3 sec earlier than normal after the signal of the side B sensor (rising edge) has been generated.
1105	The signal of the side A sensor (rising edge) is generated 0.3 sec earlier than normal after the signal of the SP-C (falling edge) has been generated.
1106	The signal of the A side sensor (falling edge) is generated 0.3 sec earlier after the signal of the SP-D (rising edge) has been generated.
1107	The signal of the SP-D (rising edge) is generated 0.3 sec earlier than normal after the signal of the side A sensor (rising edge) has been generated.
1108	The signal of the SP-D (rising edge) is generated 0.3 sec earlier than normal after the signal of the side A sensor (falling edge) has been generated.
1201	The signal of the side B sensor (falling edge) is generated 0.3 sec later than normal after the signal of the SP-D (falling edge) has been generated.
1202	The signal of the side B sensor (rising edge) is generated 0.3 sec later than normal after the signal of the SP-C (rising edge) has been generated.
1203	The signal of the SP-C (rising edge) is generated 0.3 sec later than normal after the signal of the side B sensor (falling edge) has been generated.
1204	The signal of the SP-C (falling edge) is generated 0.3 sec later than normal after the signal of the side B sensor (rising edge) has been generated.
1205	The signal of the side A sensor (rising edge) is generated 0.3 sec later than normal after the signal of the SP-C (falling edge) has been generated.
1206	The signal of the side A sensor (falling edge) is generated 0.3 sec later than normal after the signal of the SP-D (rising edge) has been generated.
1207	The signal of the SP-D (rising edge) is generated 0.3 sec laser than normal after the signal of the side A sensor (rising edge) has been generated.
1208	The signal of the SP-D (rising edge) is generated 0.3 sec later than normal after the signal of side A sensor (falling edge) has been generated.

SP-C: Signal plate C.
SP-D: Signal plate D.

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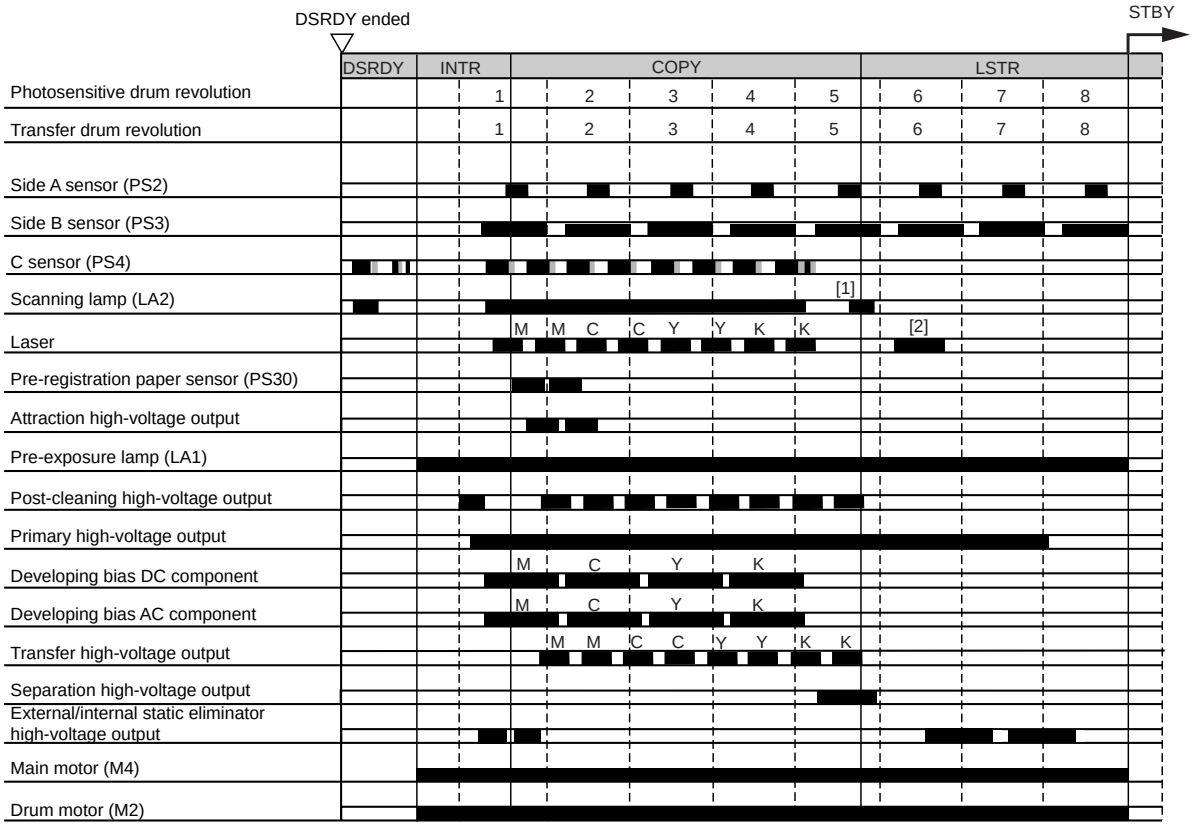
C. Sequence of Operations (image formation system)



[1] Shading correction
[2] Potential control measurement

Figure 6-104 A4/LTR, 2 Copies, Full Color, Direct, Cassette 1

II. IMAGE STABILIZATION

A. Outline

The image stabilization mechanism has the following items of control:

1. Determining the grid bias.
2. Determining the developing bias.
3. Determining the laser output.

Figure 6-201 shows the construction of the potential control mechanism:

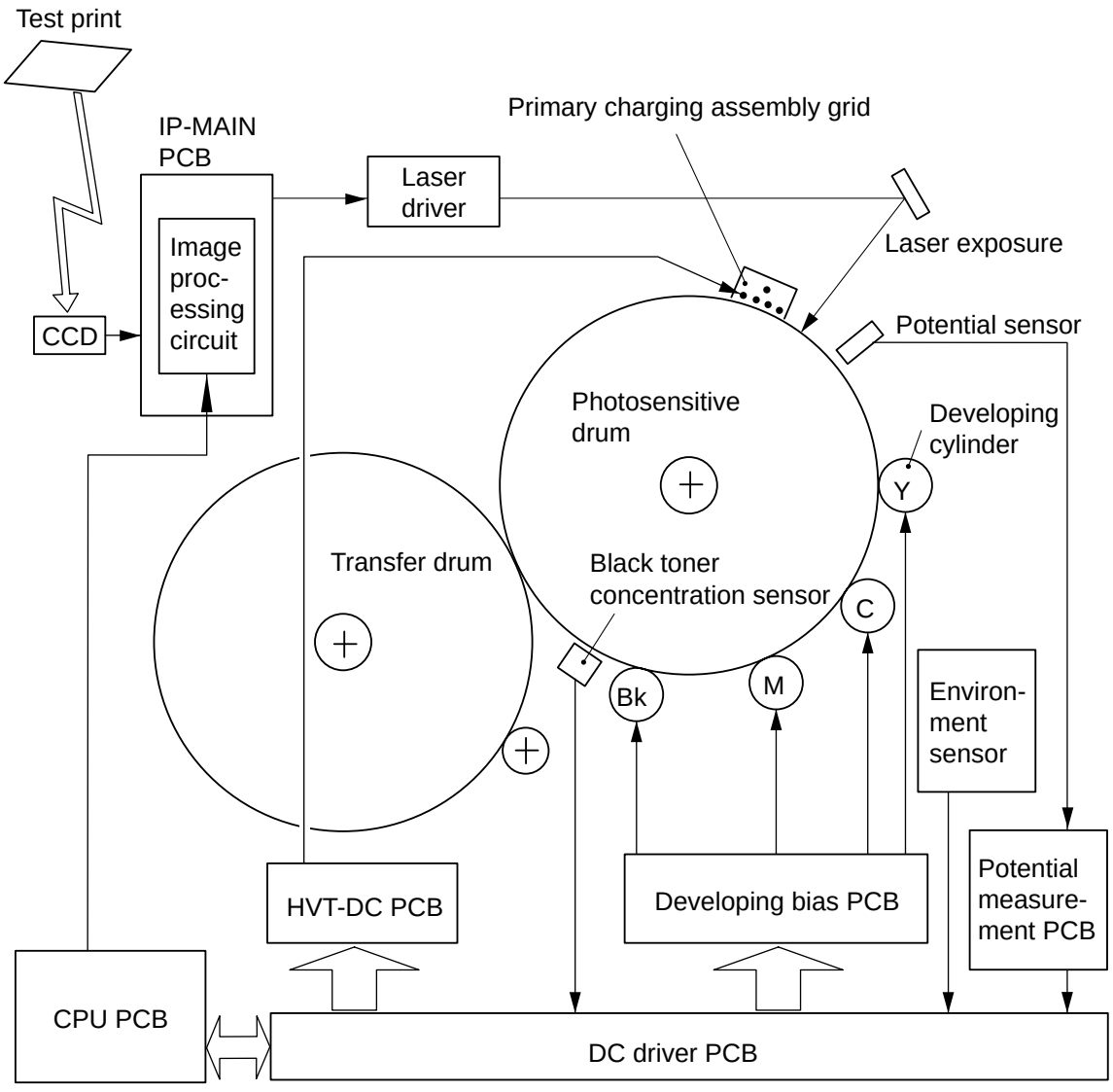


Figure 6-201

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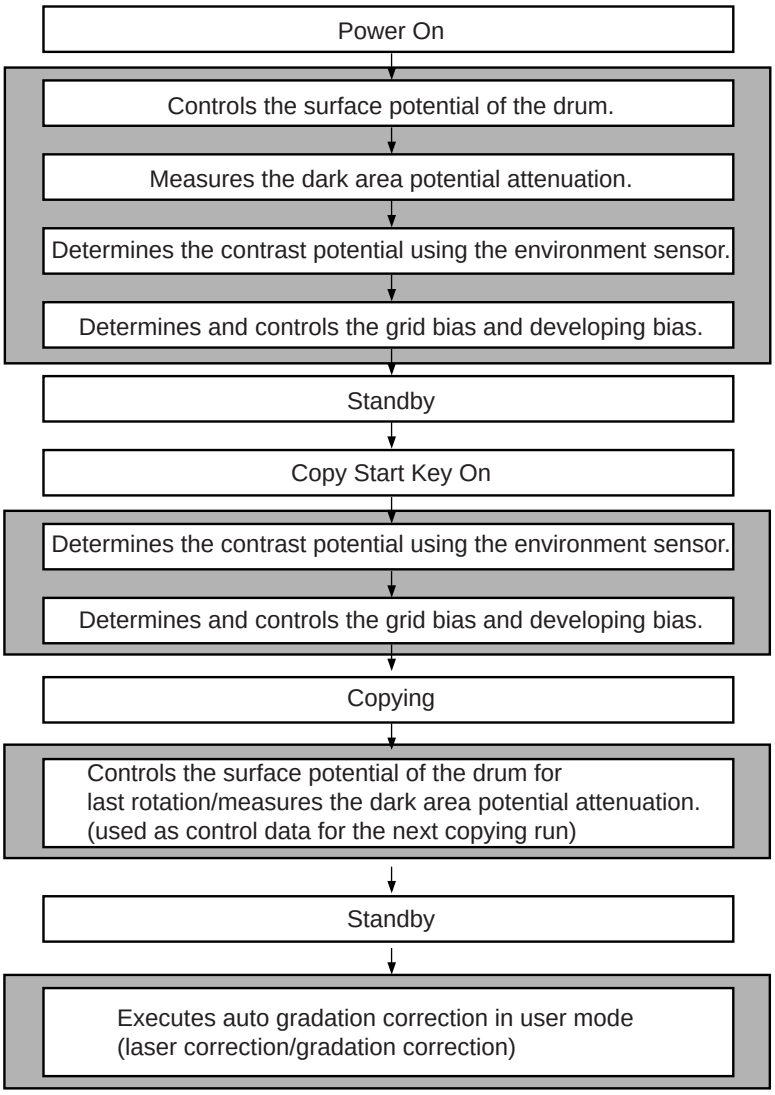
The image stabilization mechanism operates as follows:


Power On
Controls the surface potential of the drum.
Measures the dark area potential attenuation.
Determines the contrast potential using the environment sensor.
Determines and controls the grid bias and developing bias.
Standby
Copy Start Key On
Determines the contrast potential using the environment sensor.
Determines and controls the grid bias and developing bias.
Copying
Controls the surface potential of the drum for last rotation/measures the dark area potential attenuation. (used as control data for the next copying run)
Standby
Executes auto gradation correction in user mode (laser correction/gradation correction)

	Operation	Sensor used	Destination of feedback
1	Controlling the initial surface potential of the drum	Potential sensor	Primary grid bias, developing bias
2	Determining/controlling the grid bias and developing bias	Potential sensor	Primary grid bias, developing bias
3	Compensating for changes in environment	Environment sensor	Primary grid bias, developing bias
4	Executing auto gradation correction	_____	Laser correction/image processing block (density processing)

Table 6-201

B. Controlling the Surface Potential of the Drum

1. Outline

The surface potential of the drum is controlled for the following to determine the grid bias and developing bias of the primary charging assembly:

- When the power switch is turned on while the temperature of the fixing roller is 130°C or less. (drum surface potential control and dark area potential attenuation measurement)
- During last rotation for each copying run. (drum surface potential control only)
- During last rotation for every 2 hr. (drum surface potential control and dark area potential attenuation measurement)
- When FUNCTION>DPC>DPC is executed in service mode. (drum surface potential control and dark area potential attenuation measurement)

2. Measuring the Surface Potential of the Drum

The grid bias (Vg) of the primary charging assembly is set to the two levels of voltage shown in Table 6-202, and the dark area potential when the laser is off (VD) and the light area potential when the laser is on (VL) are measured by the potential sensor.

Using the VD/VL measurements and the grid bias (Vg), a graph like the one shown in Figure 6-202 is prepared.

Vgl	Vg2
-500V	-700V

Table 6-202

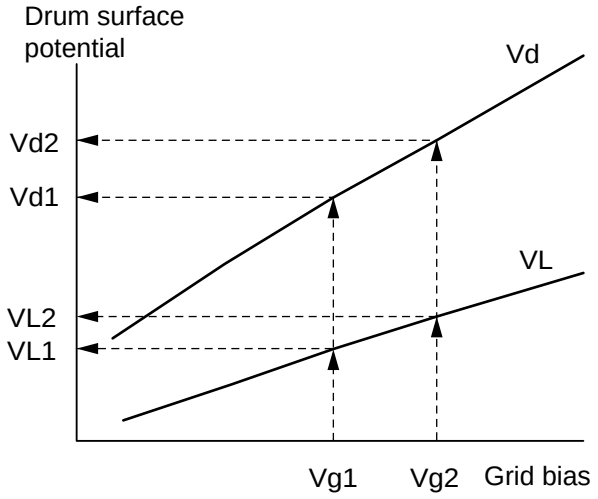


Figure 6-202

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3. Measuring the Dark Area Potential Attenuation

The operation referred to as "dark area potential attenuation measurement" consists in measuring the rate of attenuation to prevent fogging and carrier adhesion. (The potential created on the photosensitive drum by primary charging tends to decrease if left alone in a dark area.)

In practice, the degree of decrease of the potential created by primary charging is detected at the point of development, and the result is used as feedback when controlling the developing bias.

The grid bias (Vg) of the primary charging assembly is set to +500 and +700 V, and the dark area potential (VD3, VD4) occurring when the laser is off and the light area potential (VL3, VL4) occurring when the laser is on are measured by the potential sensor.

The measurements taken during the first rotation (VD3, VD4, VL3, VL4) and the measurements taken during the second rotation (VD5, VD6, VVL5, VL6) are compared, and the differences (= VD3 - VD5, = VL3 - VL5, = VD4 - VD6, = VL4 - VL6) are used to determine the rate of attenuation.

Dark area potential attenuation measurement is executed during initial multiple rotation at time of power-on and every two hours thereafter.

4. Controlling the Environment Contrast Potential

The operation referred to as "environment contrast potential control" consists in measuring the environment (temperature/humidity) around the developing assembly to determine the target contrast potential.

Changes in the environment around the developing assembly change the characteristics of developing agents and, consequently, affect the image density. To make up for such changes, the environment (temperature/humidity) around the developing assembly is measured by the environment sensor to determine the target contrast potential.

Figure 6-203 shows the relationship between changes in the environment and the target contrast potential.

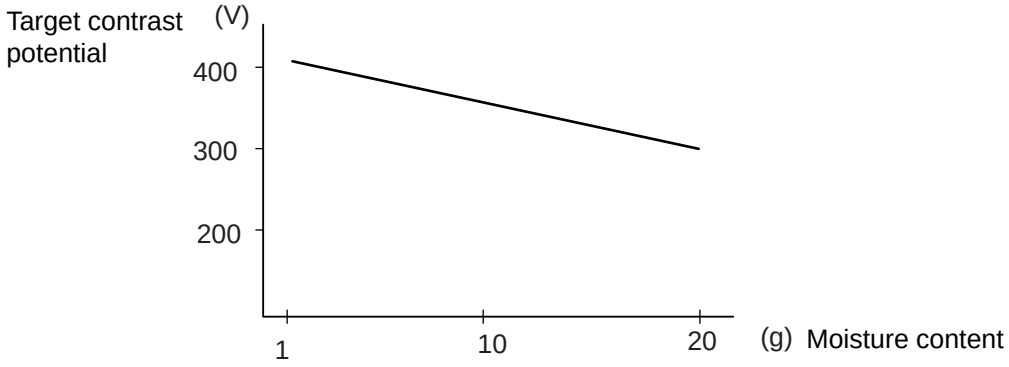

Figure 6-203

5. Setting the Grid Bias and the Developing Bias

The grid bias and the developing bias DC component are determined using Vd/VL values, dark area potential attenuation value, and target contrast potential value.

A line is drawn for the developing bias DC (Vdc) running through points representing the sum of Vd and Vback voltages (for removal of fogging during copying operation; the Vback voltage is set to 110 to 130 V according to the content of moisture measured by the environment sensor).

Then, a point where the contrast potential between Vdc and VL (Figure 6-206) is identical to the target contrast potential is found, and the target values of the grid bias and the developing bias are obtained.

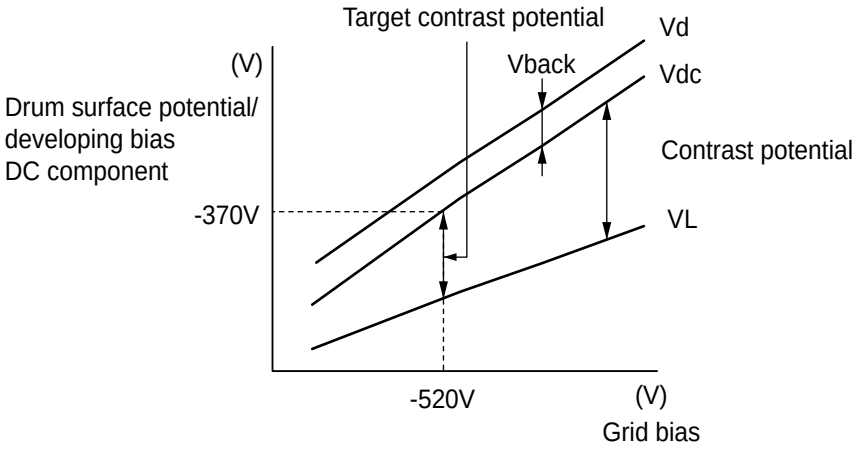

Figure 6-204

The measurements of the surface potential may be checked by executing FUNCTION>DPC>DPC in service mode (DISPLAY>DPOT); use the following as a guide in the field:

Image display	Approximate guide
V00-500V	430 to 570
V00-700V	600 to 800
VFF-500V	50 to 150
VFF-700V	100 to 200

Table 6-203

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6. Sequence of Operations (initial drum surface potential control timing)

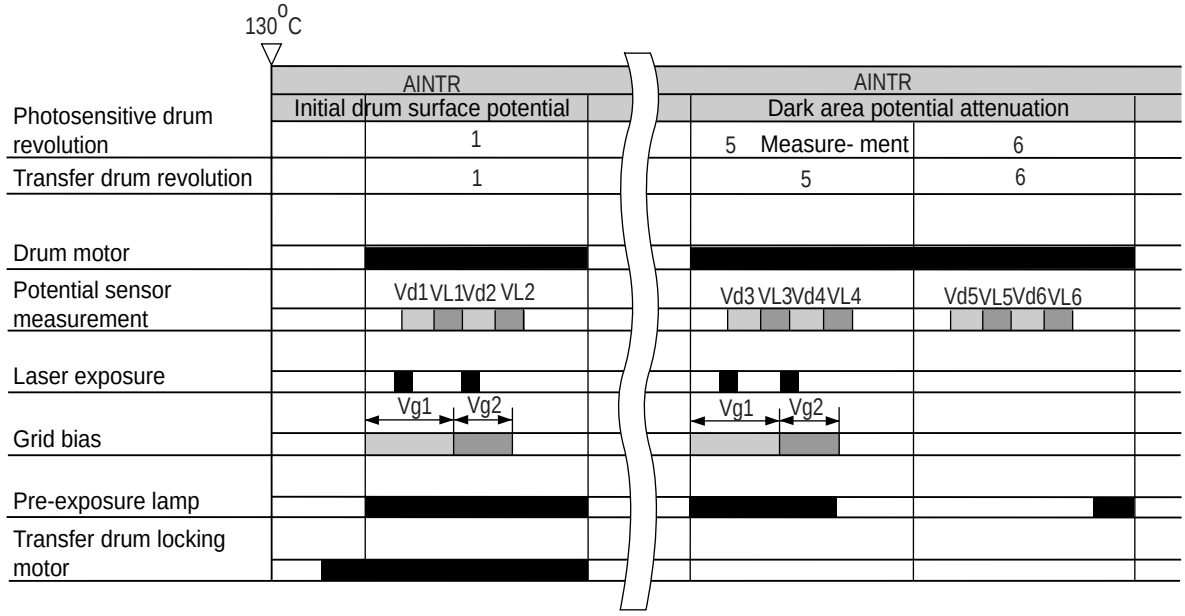

Figure 6-205 Sequence at Power-On

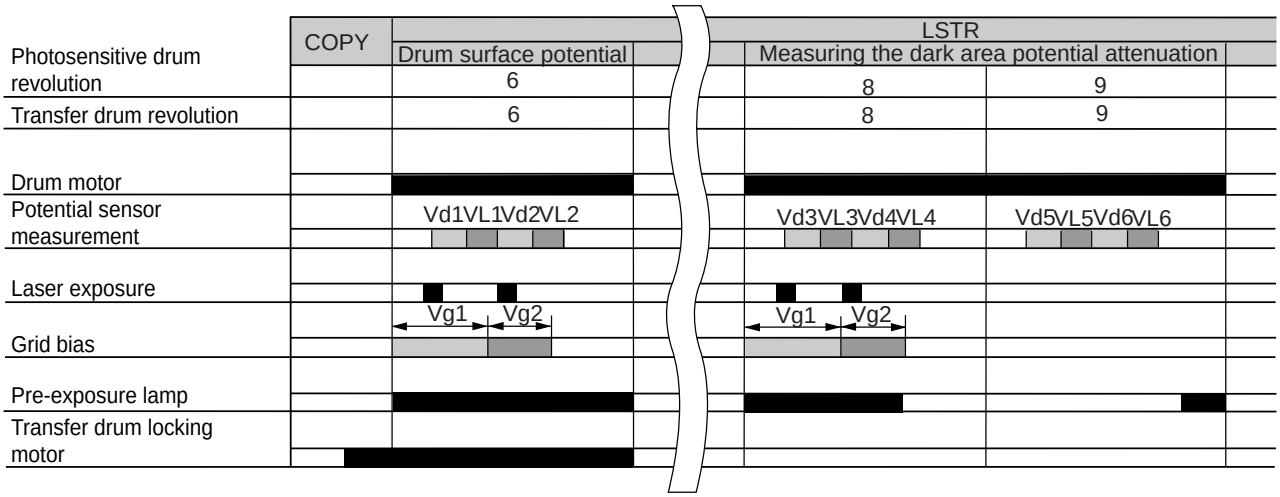

Figure 6-206 Sequence during Last Rotation

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7. Auto Gradation Correction in User Mode

a. Outline

The copier's auto gradation correction is designed to produce ideal gradation in images.

A 64-gradation halftone image (for each color) is printed in user mode, and the density of the output is read by the CCD of the reader unit for the following control:

- Correcting the laser output.
- Correcting gradation

b. Operations

For instructions on how to operate user mode, see Chapter 1.

1) Generate auto gradation correction test prints 1 and 2 (64 gradations for each color) in user mode. Make sure that test prints 1 and 2 differ in resolution.

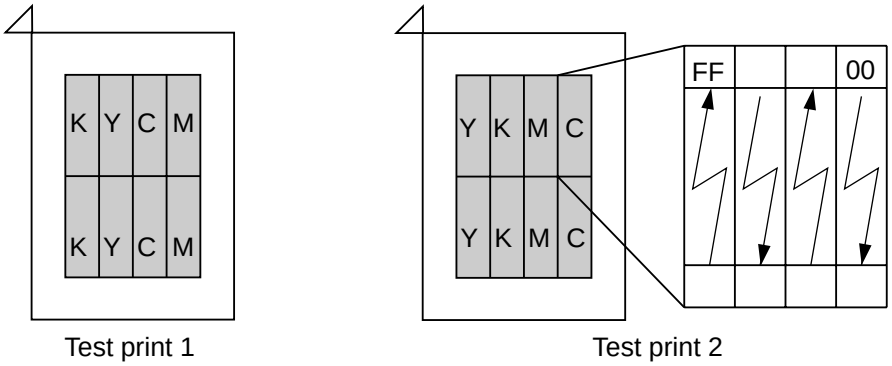

Figure 6-207

2) Place the generated test print on the copyboard glass, and have the copier read it. The copier will determine the laser control value and the gradation control value from the image data it collected from the test print.

8. Checking the LED Activation for the Potential Measurement Circuit

LED1 remains on at all times as long as the copier is supplied with power, indicating that the potential sensor is operating normally. If it is not in a normal way, suspect that the 24 V-F power is not supplied or the potential measurement unit is faulty.

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Related Error Code

E061

E061 is an error code associated with the mechanism controlling the surface potential of the drum, and points to the following:

(The notation "xx" of detail code indicates the color of the developing assembly; e.g., xx=01: M, xx=02: Y, xx=03: Y, xx=04: Bk.)

Check	Detail code	Description	Possible cause
Potential sensor	0000	Vd/VL before offset is -10 V or less.	The potential sensor is faulty.
	0001	The offset value is other than 100 ±50.	
Pre-exposure lamp	0010	VL3 is -200 V or less.	The pre-exposure lamp is out of order.
Primary charging assembly	0020	Vd1/Vd2/VdI is -30 V or less.	The primary high-voltage output is faulty, or the charge wire is broken.
	0030	The Vd1/Vd2/VdI is -100 V or less.	The grid bias has not been generated.
	0031	Vd1/Vd2/VdI is -900 V or more.	The grid bias control mechanism is faulty.
	0032	The difference between Vd1 and Vd2 is 100 V or less.	The grid bias output is faulty.
Post-cleaning charging assembly	0040	Vd3 is -100 V or less.	The post-cleaning charging output is faulty.
Laser	0050	The difference between Vd1 and VL1 is 30 V or less and, in addition,Vd1 is -350 or more, or The difference between Vd2 and VL2 is 30 V or less and, in addition, Vd2 is -550 V or more.	The laser fails to turn on, the guiding mirror is faulty, or the laser shutter is faulty.
	0051	Vd1 is -300 V or less, and Vd2 is -500 V or less.	The laser is faulty.
	0052	VL1 is -200 V or more, and VL2 is -250 V or more.	The laser fails to turn on, the guiding mirror is faulty, or the laser shutter is faulty.
	0053	Vd1 is -100V or less, and Vd2 is -150V or less.	The laser is faulty.

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E061

Check	Detail code	Description	Possible cause
Dark area potential attenuation limit	0060	The dark area potential attenuation value is 150 V or more.	
Control limit	0070	The grid bias output is -900 V or more.	The grid bias upper limit is reached.
	0071	The developing bias output is -100 V or less.	The grid bias lower limit is reached.
	xx80	The developing bias output is 700 V or more.	The developing bias upper limit is reached.
	xx81	The developing bias output is 200 V or less.	The developing bias lower limit is reached.
Measure-ment limit	0090	Vd1 is 650 V or more.	The Vd1 upper limit his reached, or the photosensitive drum has deteriorated.
	0091	Vd1 is -350 V or less.	The Vd1 lower limit is reached.
	0092	VL1 is -200 V or more.	The VL1 upper limit is reached.
	0093	VL1 is -10 V or less.	The VL1 lower limit is reached.
	0094	Vd2 is -850 V or more.	The Vd2 upper limit is reached.
	0095	Vd1 is -550 V or less.	The Vd2 lower limit is reached.
	0096	VL2 is -250 V or more.	The VL2 upper limit is reached.
	0097	VL2 is -50 V or less.	The VL2 lower limit is reached.

VDI: Potential measured during initial rotation.
Vd3: Post-cleaning charging area potential as measured when the dark area attenuation is measured.
Offset value: Value determined in service mode (FUNCTION>DPC>OFST).

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III. CONTROLLING THE CHARGING MECHANISM

A. Controlling the Primary Charging Mechanism and the Grid Bias

1. Operation

The mechanism used to control the primary charging/grid bias of the primary charging assembly has the following items of control:

1. Controlling primary charging to a constant current.
2. Controlling the grid bias to a constant voltage.

2. Protection Circuit

The overcurrent detection circuit is used as a grid bias protection circuit. If overcurrent occurs, for example, as a result of a short circuit on the grid plate, the circuit will be turned off for about 0.1 sec and then will be reset automatically.

If a short circuit continues on the grid plate for some reason, all images will be error images.

Each of the signals is used for the following:

[1] HVPR (primary current activation signal)
When '1', high voltage is generated.

[2] HVGIC (grid bias activation signal)
When '1', a grid bias is ready for application.

[3] HVGI (grid bias level signal)
Controlled to +8 to +16 V; high voltage is generated at +16 V or less.

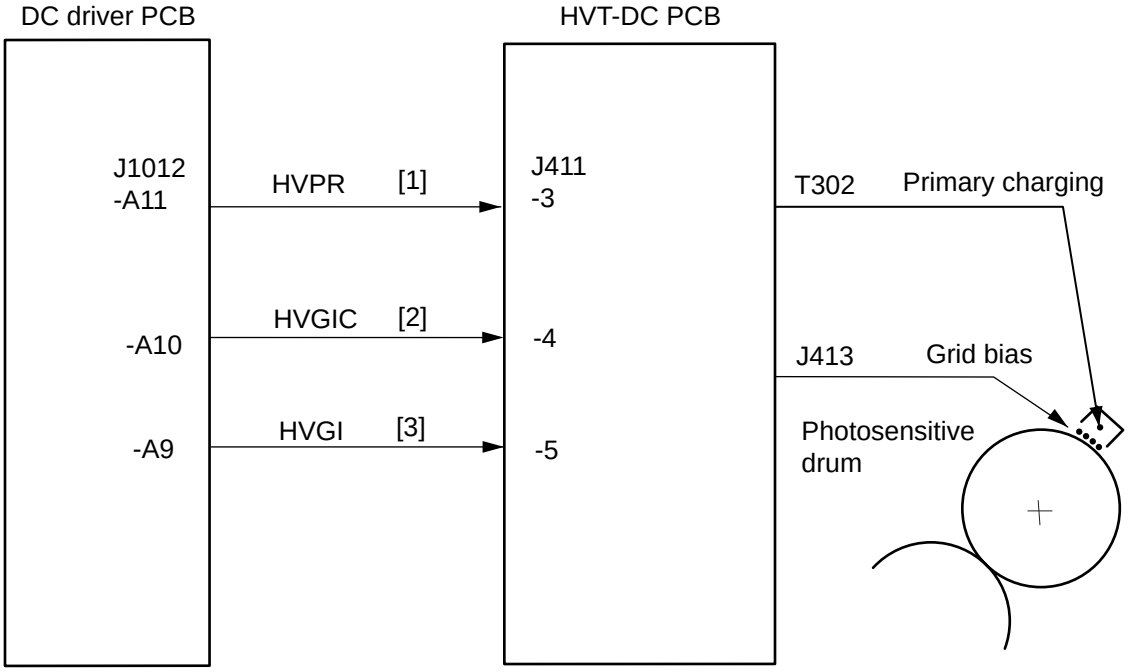

Figure 6-301

B. Controlling the Developing Bias

1. Operation

The developing bias control mechanism has the following items of control:

1. Controlling the developing bias AC component to a constant voltage.
2. Controlling the developing bias DC component to a constant voltage.

Each of the signals is used for the following:

[1] Controlling the Drive of the Developing Bias PCB

When DBSBY is '1',

The reference voltage generation circuit turns on and the developing bias PCB cooling fan drive circuit turns on.

Power is supplied to each circuit, and the developing bias PCB cooling fan turns on.

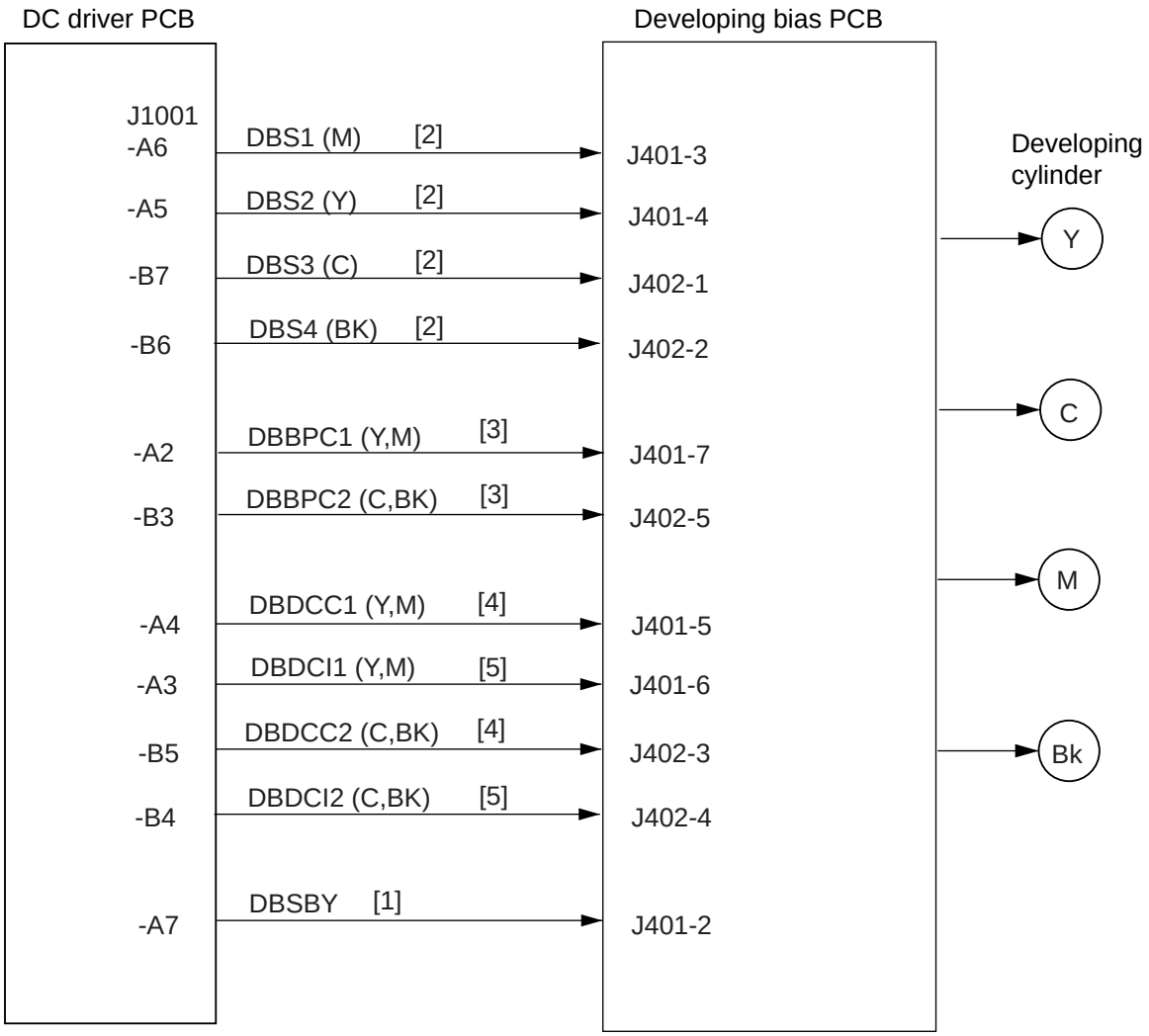

Figure 6-302

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[2] Turning On/Off the Double Blank Pulses
When DBBPC1 (M, Y)/DBBPC2 (C, Bk) is '1', double blank pulses are generated.
[3] Turning On/Off the DC Bias
When DBDCC1 (M, Y)/DBDCC2 (C, Bk) is '1', the DC bias output is ready for generation.
[4] Controlling the Application Voltage Level of the DC Bias
DBDCI1 (M, Y)/DBDCI2 (C, Bk) is controlled to +8 to +16 V; a DC bias is generated at +16 V or less.
(DBDCI1 and DBDCI2 are controlled using the data from potential control.)
[5] Turning On/Off the M, C, Y, and Bk Developing Biases
When DBS1 (M)/DBS2 (Y)/DBS3 (C)/DBS4 (Bk) is '1', the developing bias is generated.

2. When Controlling the M Developing Bias

1. DBSBY is '1'.
2. DBBPC1 (M, Y) is '1'.
3. DBDCC1 (M, Y) is '1'.
4. DBDCI1 (M, Y) is controlled to +8 to +16 V (based on potential control data)
5. DBS1 (M) is '1'.

The above condition supplies the M developing cylinder with a developing bias.

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C. Controlling the Attraction Charging Mechanism and Transfer Charging Current

1. Operations

The attraction charging / transfer charging mechanism has the following items of control:

1. The attraction charging mechanism is controlled to a contact current.
2. The transfer charging mechanism is controlled to a constant current.
3. The current is controlled to suit the type of copy paper and the reading of the environment sensor.

The CPU PCB performs appropriate current control to suit the type of transfer medium (regulator, thick, transparency) and the temperature and humidity readings from the environment sensor.

Each of the signals is used for the following:

[1] HVATC (attraction charging current ON/OFF control signal)
When '1', the charging output is ready.

[2] HVATI (attraction charging current level control signal)
Controlled to +8 to +16 V; at +16 V or less, the high-voltage output is generated.

[3] HVTRC (transfer charging current ON/OFF control signal)
When '1', the charging output is ready.

[4] HVTRI (transfer charging current level control signal)
Controlled to +8 to 16 V; at +16 V, the high-voltage output is generated.

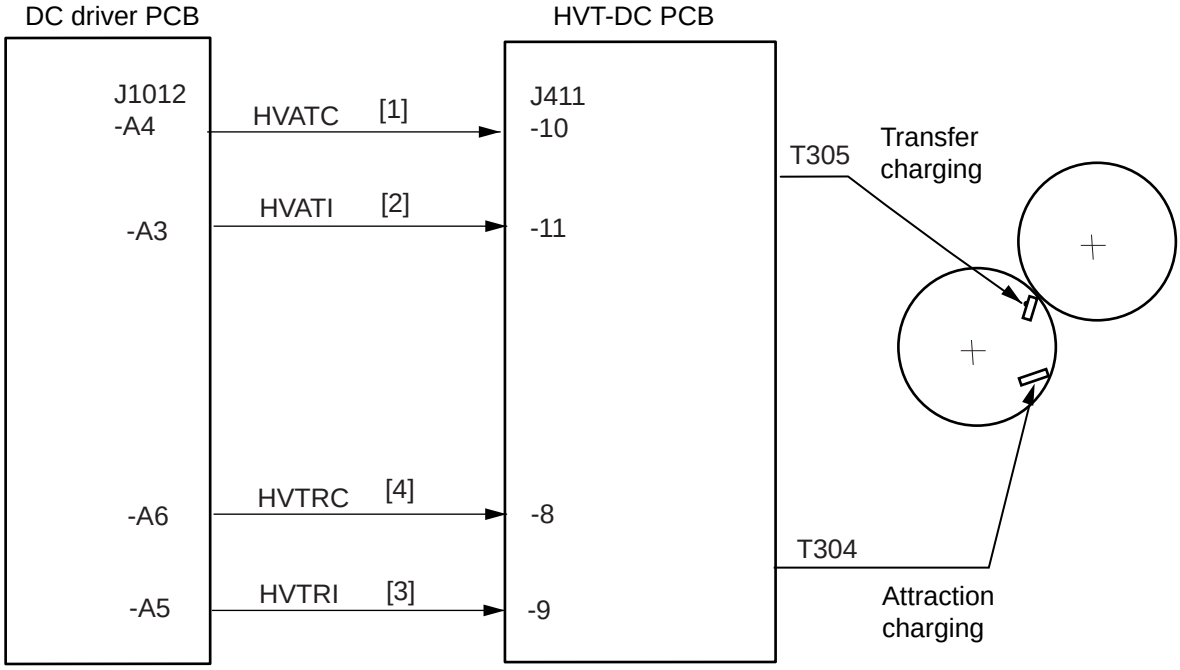

Figure 6-303

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D. Controlling the Separation Charging Current

1. Operation

The separation charging control mechanism has the following items of control:

1. Controlling the separation charging DC component to a constant current.
2. Controlling the separation charging AC component to a constant voltage.
3. Controlling the current and the voltage to suit the type of copy paper and the reading from the environment sensor.
   The CPU PCB controls the current and the voltage to suit the type of transfer medium (regular paper, thick paper, transparency) and the reading from the environment sensor.

Each of the signals is used for the following:

[1] SPDCC (separation charging DC component ON/OFF control signal)
When '1', the charging DC component output is ready.

[2] SPDCI (separation charging DC component current level control signal)
Controlled to +3 to +11 V; at +3 V or more, the high voltage output is generated.

[3] SPACC (separation charging AC component ON/OFF control signal)
When '1', the charging AC component output is ready.

[4] SPACI (separation charging AC component voltage level control signal
Controlled to +3 to +11 V; at 11 V or less, the high-voltage output is generated.

[5] ACSBY (AC component drive control signal)
Then '1', the HVT-AC PCB is ready for operation.

[6] AC-ERR (HVT-AC PCB error signal
When '0', an error is detected in the HVT-AC circuit.

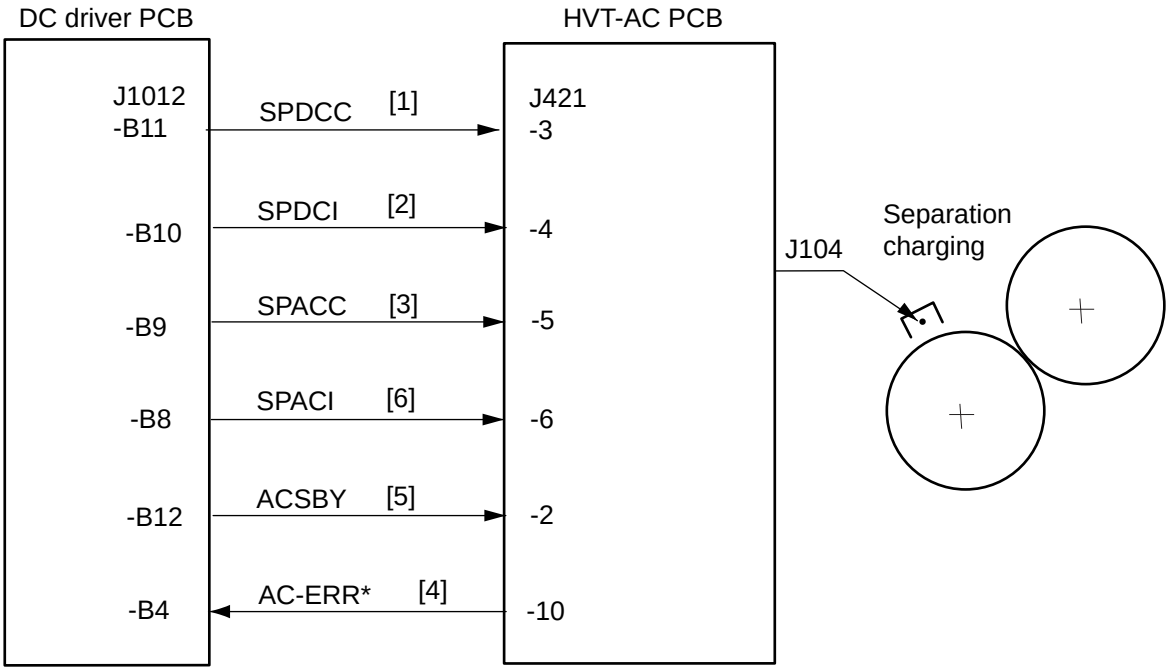

Figure 6-304

Related Error Code

E067

The AC-ERR signal goes '0' when any of the following errors occurs in the separation charging circuit or the external/internal static eliminator circuit of the HVT-AC circuit:

1. The separation DC/AC high-voltage output is absent.
2. The external/internal static eliminator AC high-voltage output is absent.
3. The internal static eliminator DC high-voltage output is absent.
4. The external/internal static eliminator AC component ON/OFF control signal (HVIOC) remains '1' for more than a specific period of time.
5. The connector J421 is disconnected.
6. The AC-ERR signal wire is grounded (e.g., trapping).

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E. Controlling the External/Internal Static Eliminating Current

1. Operation

The external/internal static eliminating control mechanism has the following items of control:

1. Controlling the static eliminating current to a specific level.
2. Turning on/off the high-voltage output.

Each of the signals is used for the following:

[1] HVIOC (external/internal static eliminating current AC component ON/OFF control signal)
When '1', the static eliminating current AC component output is ready.

[2] HVIDCC (internal static eliminating current DC component ON/OF control signal)
When '1', the static eliminating current DC component output is ready.

[3] HVIDCI (internal static eliminating current DC component level control signal)
Controlled to +3 to +11 V; at +11 V, the high-voltage output is generated.

For related error codes, see D. "Controlling the Separation Charging Current."

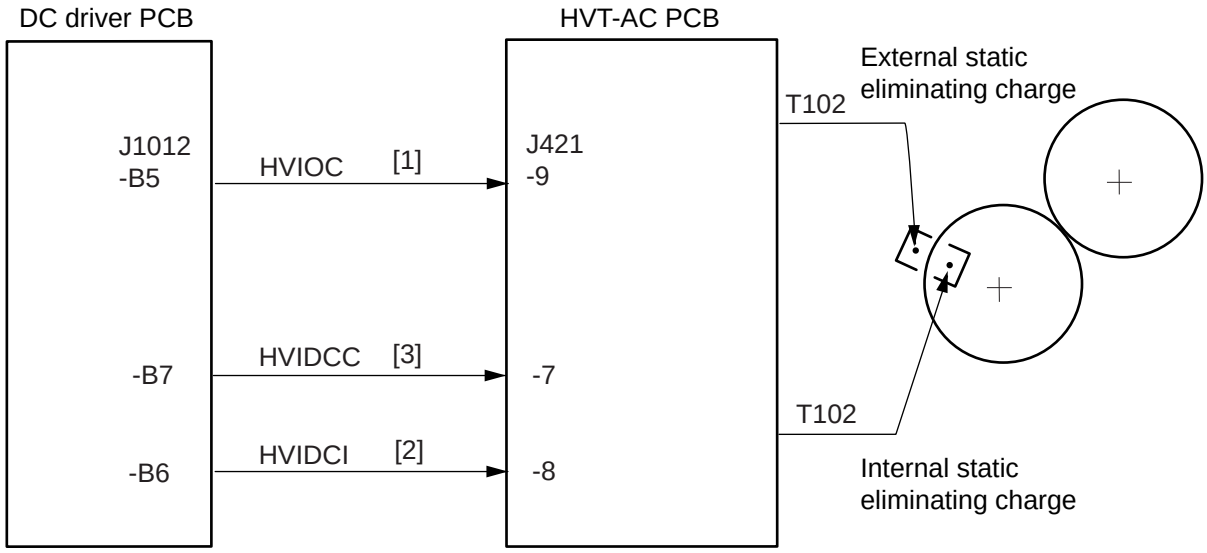

Figure 6-305

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F. Controlling the Post-Cleaning Charging Current

1. Operations

The post-cleaning charging mechanism has the following items of control:

1. Controlling the static eliminating charge to a constant current level.

Each of the signals is used for the following:

[1] HVCC (post-cleaning charge ON/OFF control signal)
When '1', the high-voltage output is ready.

[2] HVCI (post-cleaning charge level control signal)
Controlled to +3 to +11 V; at +11 V or less, the high-voltage output is generated.

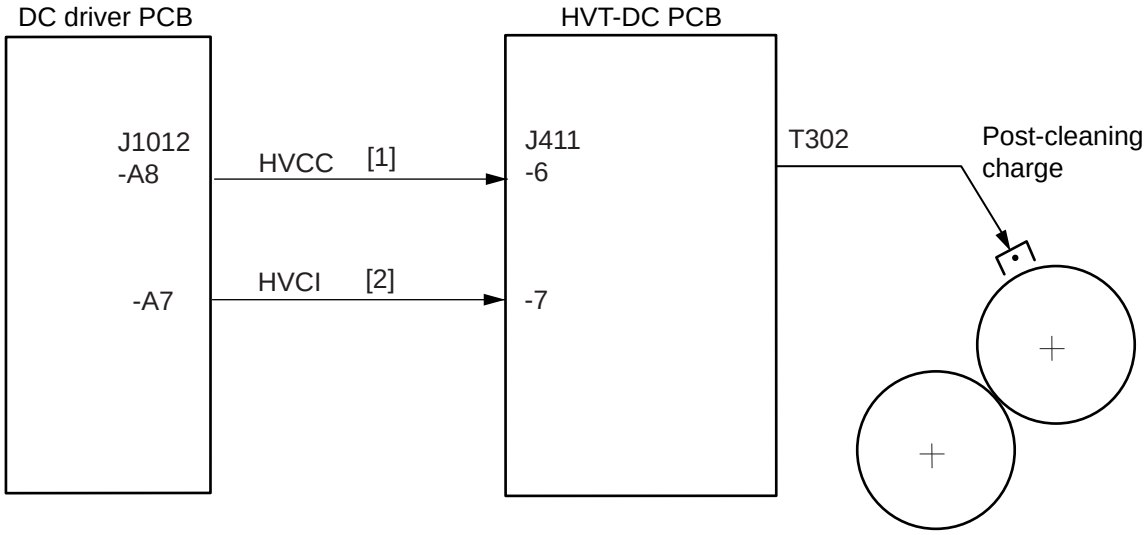

Figure 6-306

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G. Controlling the Temperature of the Photosensitive Drum

1. Control

The photosensitive drum temperature control mechanism has the following items of control:

Item	Description
Drum heater	60W
Temperature measurement	By thermistor (TH)
Reference temperature	41°C
Error temperature	109°C

Table 6-301

When the error temperature is reached, the control IC turns on to shut off the power to the drum heater.

2. Controlling the Power Using the Environment Switch SW6

As long as the environment switch (SW6) is on, the drum heater remains powered regardless of the state (on/off) of the main switch.

When the switch is off, on the other hand, the drum heater is powered only when the main switch is on. At the time of shipment, the switch is set to OFF.

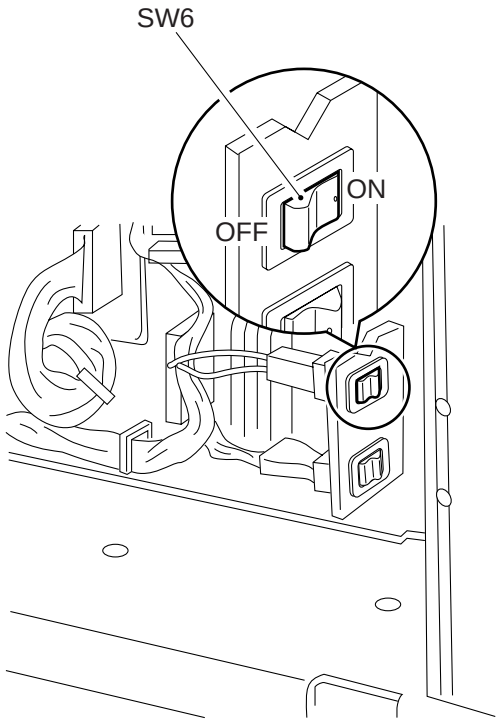

Figure 6-307

Each of the signals is used for the following:

[1] SHUTOFF*
It goes '0' when the CPU PCB detects an error (e.g., fault in the fixing heater), thereby turning off the main switch to cut off the power to the power supply PCB.

[2] DRHOFF
When other heaters are on, it goes '1' to cut off the power to the drum heater and the cassette heater, thereby reducing power consumption. (100-/120-V model only)

[3] DRHERR
It goes '1' when SSR2 is supplying the drum heater and the cassette heater with power.

Related Error Code

E062
This error occurs if the DRHERR signal goes '1' while the DRHOFF signal is '1' and SSR2 is supplying the drum heater and the cassette heater with power.

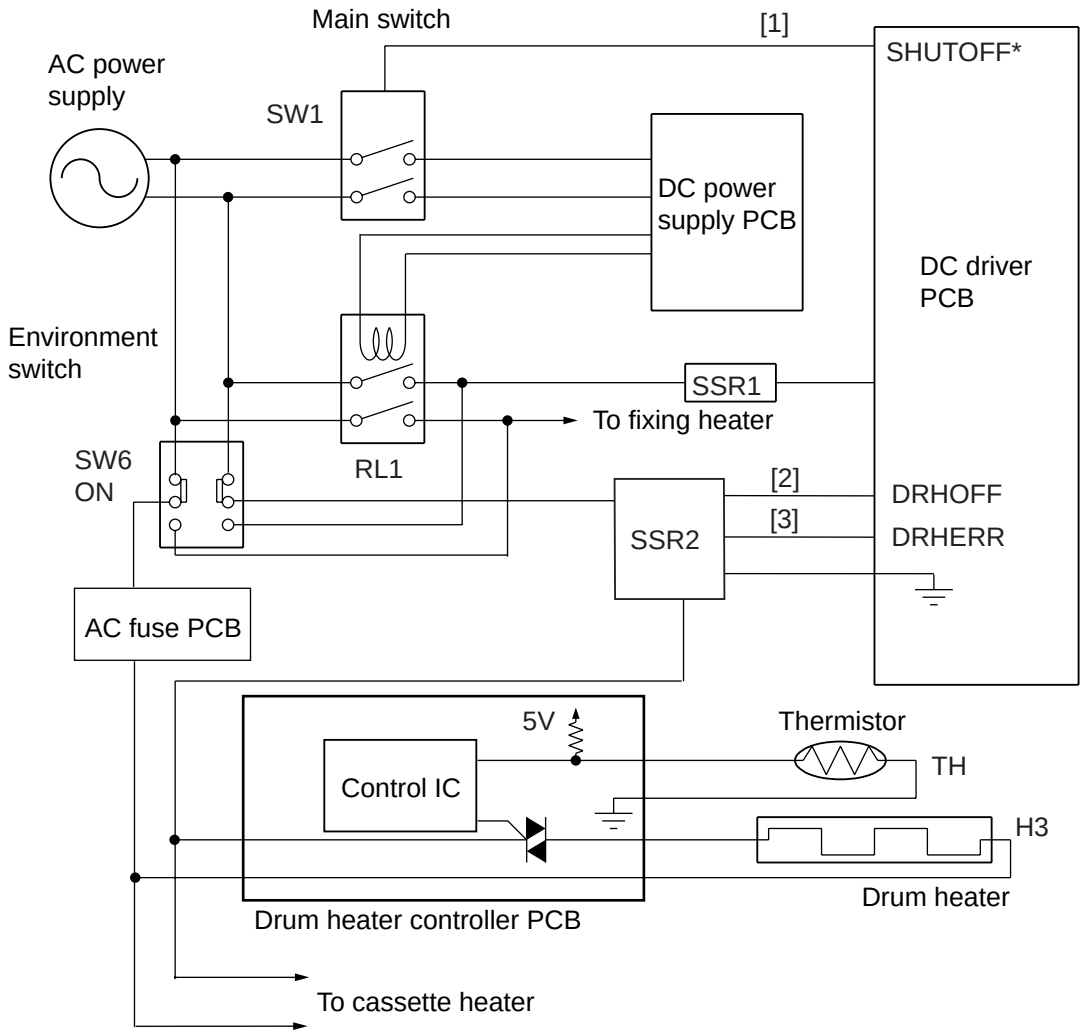

Figure 6-308

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H. Controlling the Primary Charging Wire Cleaning Mechanism

1. Operations

The primary charging wire is cleaned by moving the charging wire cleaner back and forth. The charging wire cleaner takes about 12 sec to move forward and about 12 sec to move in reverse, moving forward when PRIMFW is '1' and PRIMRV is '0', while moving in reverse when PRIMFW is '0' and PRIMRV is '1'.

2. Conditions for Operation

1. The temperature of the fixing assembly is 130ºC or less when the power switch is turned on.
2. An image was formed on the photosensitive drum as many as 2000 times since the previous cleaning operation. (The count is incremented by 4 for each full-color copy.)
3. When primary charging cleaning is executed in user mode.

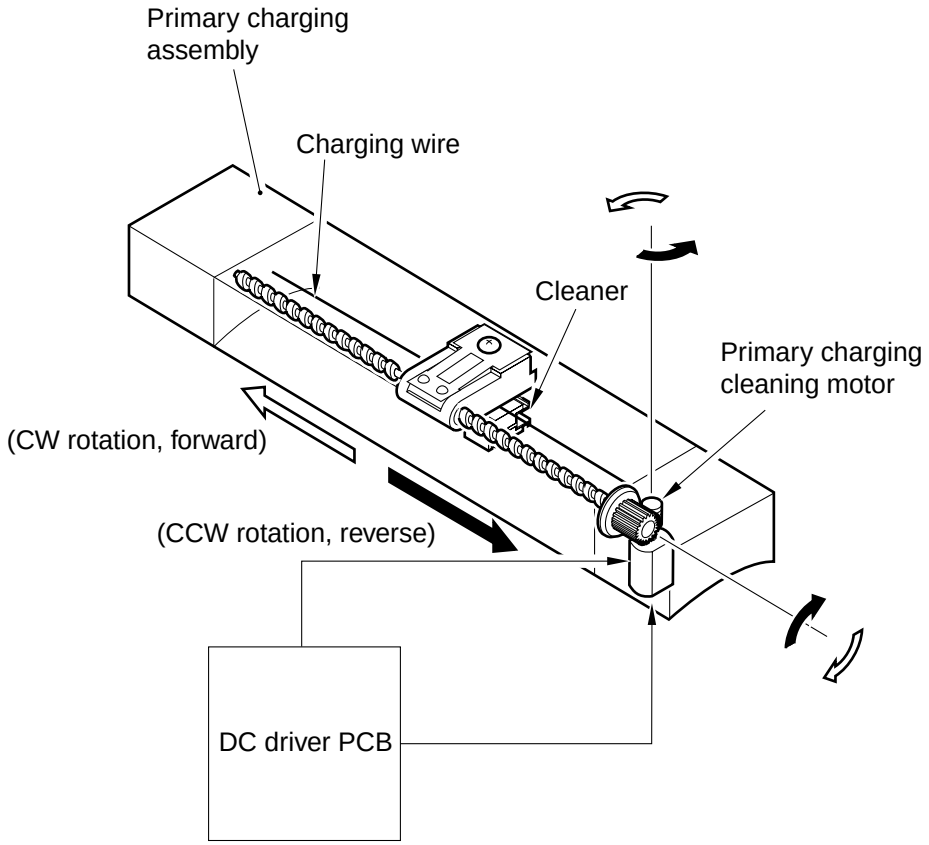

Figure 6-309

IV. DEVELOPING ASSEMBLIES

A. Outline

The developing assemblies are subject to the following items of control:

1. Locking/unlocking the assembly.
2. Controlling the concentration of color toner.
3. Controlling the concentration of black toner.
4. Controlling the supply of toner.

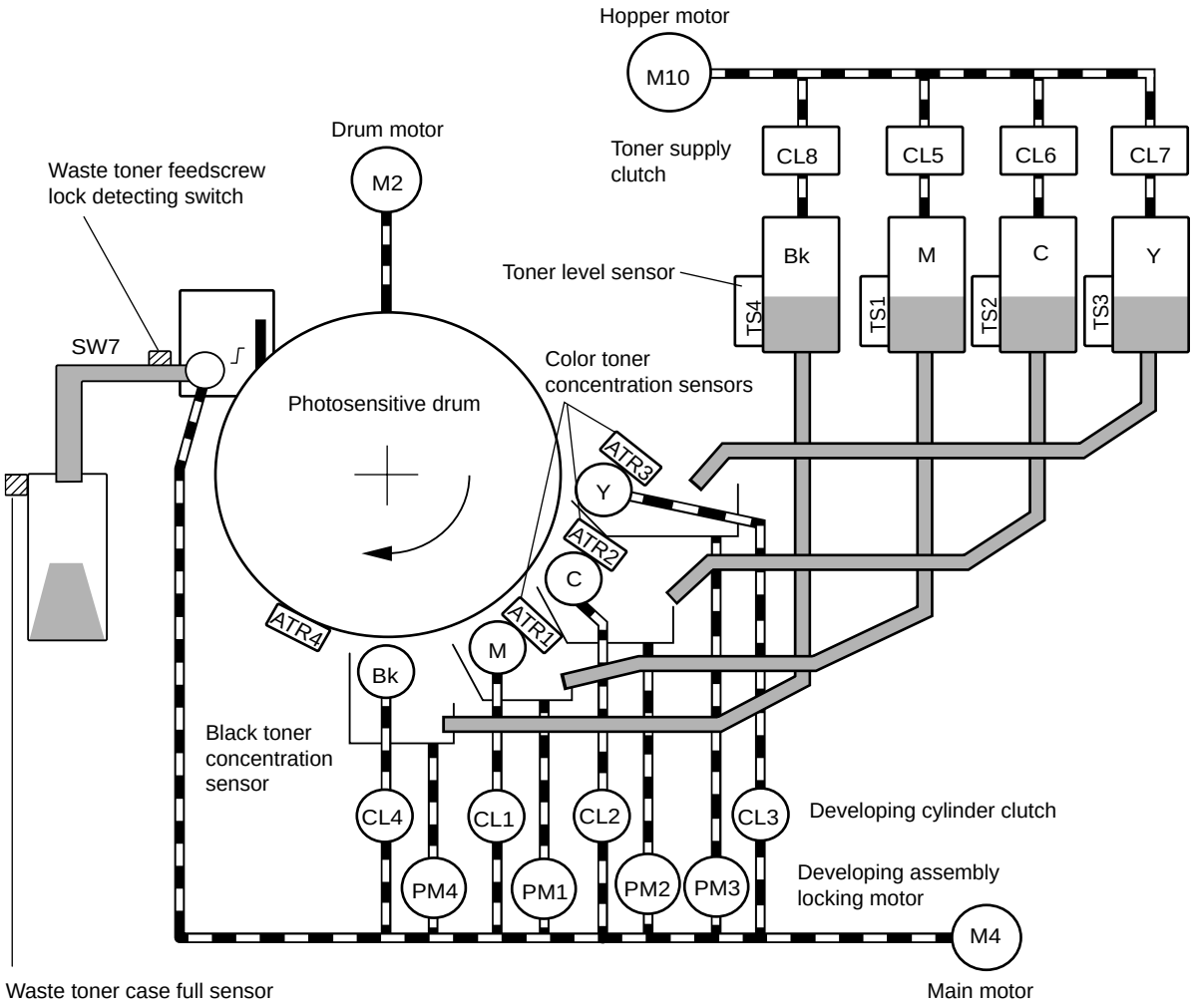

Figure 6-401

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B. Locking the Developing Assembly

When the developing assembly locking motor (PM1 through PM4) turns on, the developing assembly locking cam starts to rotate to lock the developing assembly to the photosensitive drum. Figure 6-402 shows the cyan developing assembly in its locked state.

When making a 4-color copy, locking will be M, C, Y, and Bk in sequence.

Item	Description
Developing assembly locking motor (PM1, PM2, PM3, PM4)	Pulse motor; locks and unlocks each developing assembly.
Developing assembly HP sensor (PS49, PS51, PS53, PS55)	Photointerrupters; the home position is where the developing assembly is in its unlocked state.

Table 6-401

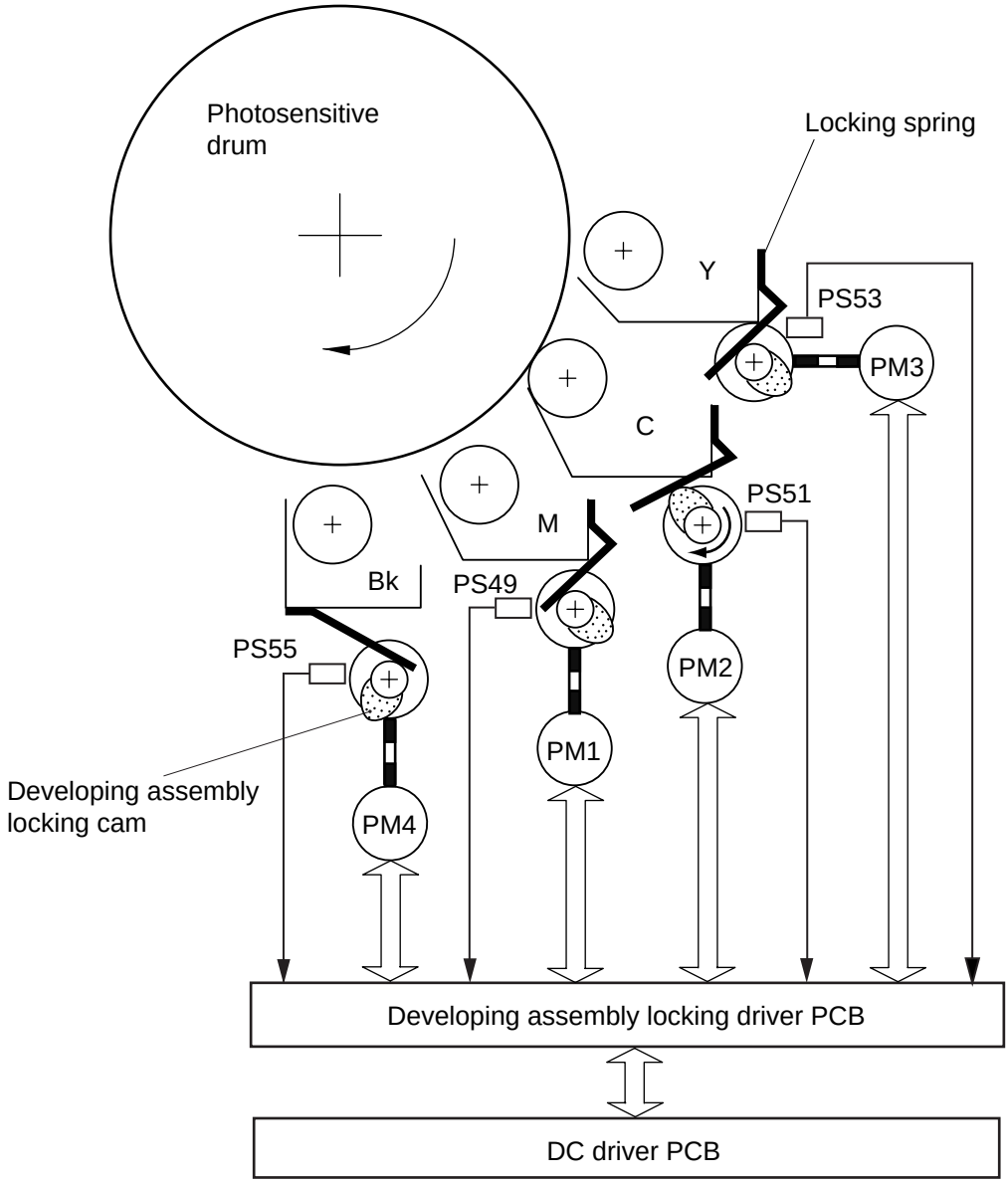

Figure 6-402

Related Error Code

E021

This error code is indicated in response to any of the following errors (they are used to monitor the developing assembly home position).

Detail code	Error
0100	The M developing assembly HP sensor does not turn on.
0200	The C developing assembly HP sensor does not turn on.
0300	The Y developing assembly HP sensor does not turn on.
0400	The Bk developing assembly HP sensor does not turn on.
0101	The M developing assembly HP sensor does not turn off.
0201	The C developing assembly HP sensor does not turn off.
0301	The Y developing assembly HP sensor does not turn off.
0401	The Bk developing assembly HP sensor does not turn off.

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C. Controlling the Concentration of Color Toner

1. Outline

To determine the length of time for color toner supply operation, the concentration of color toner on the developing cylinder is measured, thereby computing the change in toner density. Then, the density of the sample image on the photosensitive drum is measured to detect the change in toner density on the photosensitive drum.

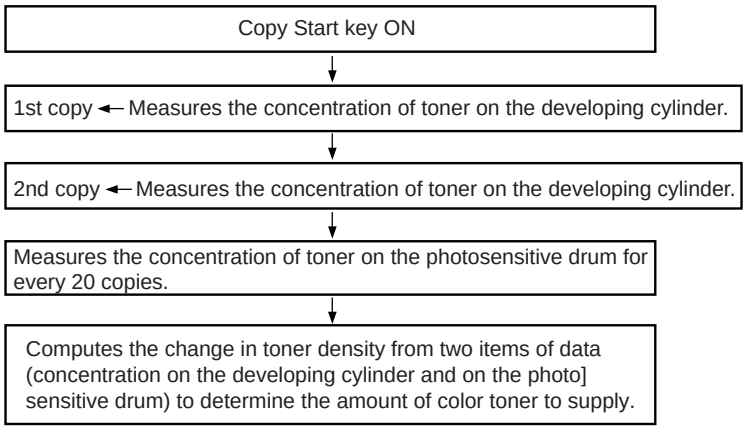
These two items of data are used to determine the amount of toner to be supplied from the hopper.

Table 6-402 shows the major functions of the color toner concentration mechanism:

Item	Description
Detecting the concentration	Light is directed to the developer, and the reflected light is measured (photo detection).
Controlling the initial concentration (reference concentration)	Measures the concentration of the starter developer at time of installation or replacement of the developer.
Measuring the concentration of toner	Measures the concentration of the developer on the developing cylinder during copying operation.
Controlling the toner supply operation	The initial concentration and the concentration during copying operation are compared to determine the amount of toner to supply.
Controlling LED deterioration	Light coming directly from the LED is measured by the photodiode used for the generation of reference signals to find out the degree of deterioration in the intensity of the LED.
Measuring and generating the image density on the drum	Measures the density of the sample image on the photosensitive drum.

Table 6-402

The following shows the flow of operations used to supply color toner:


Copy Start key ON
1st copy ← Measures the concentration of toner on the developing cylinder.
2nd copy ← Measures the concentration of toner on the developing cylinder.
Measures the concentration of toner on the photosensitive drum for every 20 copies.
Computes the change in toner density from two items of data (concentration on the developing cylinder and on the photo] sensitive drum) to determine the amount of color toner to supply.

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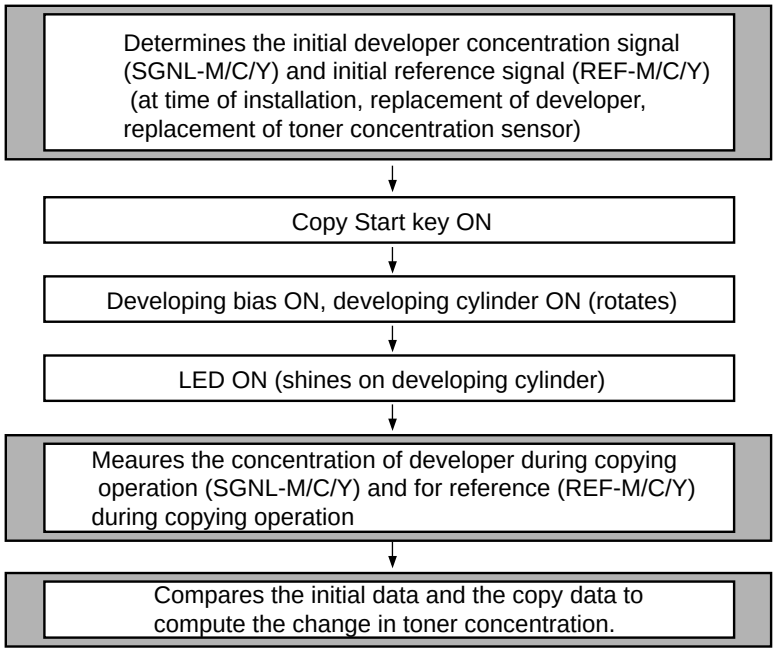
2. Measuring the Concentration of Color Toner on the Developing Cylinder Assembly

The following shows the flow of operations used to measure and control the concentration of color toner on the developing cylinder assembly:


Determines the initial developer concentration signal (SGNL-M/C/Y) and initial reference signal (REF-M/C/Y) (at time of installation, replacement of developer, replacement of toner concentration sensor)
Copy Start key ON
Developing bias ON, developing cylinder ON (rotates)
LED ON (shines on developing cylinder)
Meaures the concentration of developer during copying operation (SGNL-M/C/Y) and for reference (REF-M/C/Y) during copying operation
Compares the initial data and the copy data to compute the change in toner concentration.

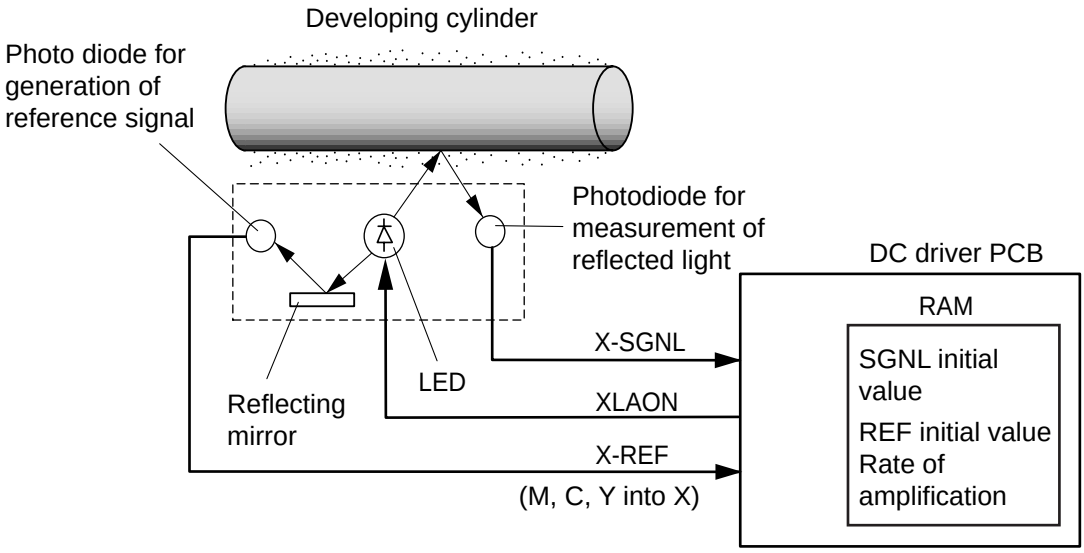


Figure 6-403

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Reference:

The copier's toner reflects near infrared light, while the carrier (iron particles) of its developer absorbs near infrared light. In other words, the near infrared reflected by the developer decreases as the amount of toner in the developer decreases.

Be sure to execute FUNCTION>INSTALL>INIT-M/C/Y in service mode at time of installation or when the developer has been replaced or the toner concentration sensor has been replaced.

The various items of measurement data may be checked in service mode.

Item	Description	Adjustment value
REF-Y	Y reference signal(Y-REF)	(guide: 300 to 650)
REF-C	C reference signal (C-REF)	(guide: 300 to 650)
REF-M	M reference signal (M-REF)	(guide: 300 to 650)
SGNL-M	M toner concentration signal (M-SGNL)	818±41
SGNL-C	C toner concentration signal (C-SGNL)	818±41
SGNL-Y	Y toner concentration signal (Y-SGNL)	818±41

Table 6-403

3. Controlling the Color Toner Concentration Measurement Mechanism of the Photosensitive Drum

The concentration of color toner on the photosensitive drum assembly is measured by the sensor used to measure the concentration of black toner. (Figure 6-406).

For details of control, see the descriptions given for controlling the measurement of black toner concentration.

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4. Sequence of Measurement

The concentration of color toner is measured during copying operation to determine the amount of toner to supply.

Patch detection, for which the Bk toner sensor is used, is performed after 20 copying operations regardless of the selected copying mode or copying size.

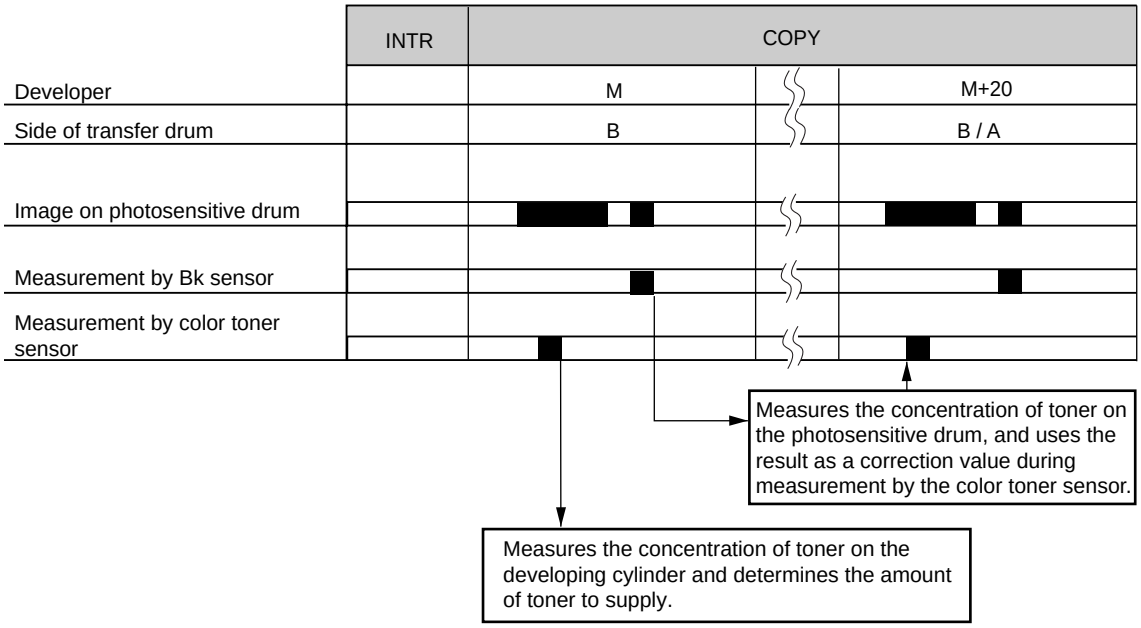
INTR
COPY
Developer
M
M+20
Side of transfer drum
B
B / A
Image on photosensitive drum
Measurement by Bk sensor
Measurement by color toner sensor
Measures the concentration of toner on the photosensitive drum, and uses the result as a correction value during measurement by the color toner sensor.
Measures the concentration of toner on the developing cylinder and determines the amount of toner to supply.

Figure 6-404 Measuring M Developer

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D. Controlling the Concentration of Black Toner

1. Outline

The concentration of black toner is measured, the density of the sample image on the photosensitive drum is measured, and the change in toner concentration is computed to determine the amount of black toner to supply (in terms of a length of time). The amount of toner supplied by the hopper is controlled to suit the change in toner concentration detected this way.

To enable measurement of the concentration of color toner, further, a sample color image is formed on the photosensitive drum and measured. (See p. 6-34.)

Item	Description
Measuring the concentration	Light is directed to a sample image, and the reflected light is measured (photo detection).
Controlling the initial concentration (reference concentration)	The concentration of a sample image is measured at time of installation or replacement of developer.
Measuring the concentration of toner	The concentration of the sample image during copying operation is measured.
Controlling the supply of toner	Compares the initial concentration and the concentration during copying operation to determine the amount of toner to supply.
Controlling LED deterioration	Light coming directly from the LED is measured by the photodiode used to generate the reference signal, detecting the degree of deterioration in the intensity of the LED (at all times).

Table 6-404

2. Controlling the Supply of Black Toner

The density of a black image developed on the photosensitive drum is measured, the change in concentration is computed, and the result is used to correct the amount of black toner to supply.

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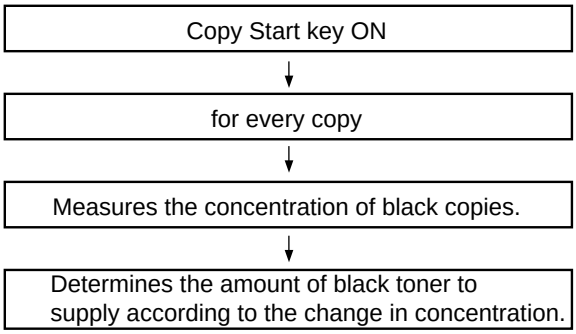
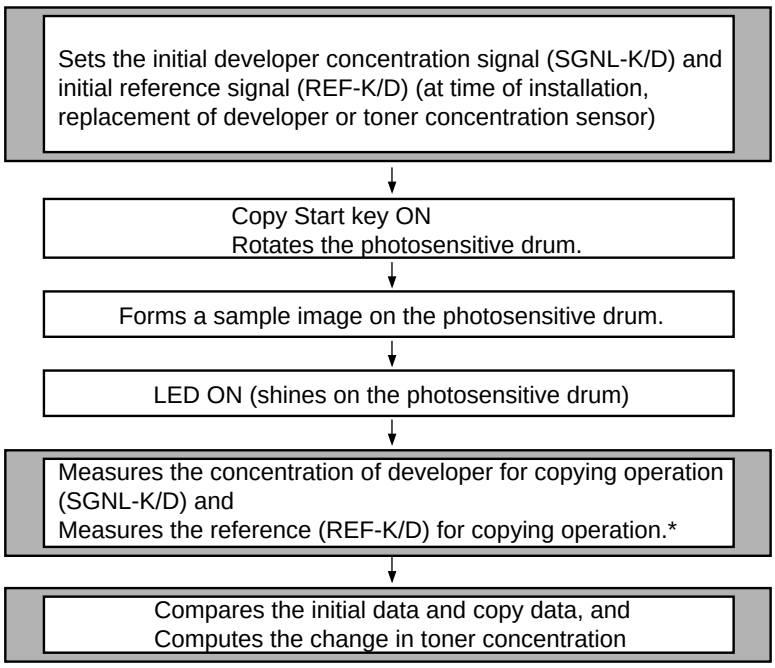
The following is the flow of operations used to control the concentration of black toner:


Copy Start key ON
for every copy
Measures the concentration of black copies.
Determines the amount of black toner to supply according to the change in concentration.

3. Measuring the Concentration of Black Toner (patch detection)

A sample black toner image (patch image) formed on the photosensitive drum is measured using a LED and a sensor, and the result is read as the black toner concentration signal and the reference signal. Then, a comparison is made of these signals, window dirt correction value, and initial value stored in RAM to compute the change in concentration.

The following is the flow of operations used to measure the concentration of black toner:


Sets the initial developer concentration signal (SGNL-K/D) and initial reference signal (REF-K/D) (at time of installation, replacement of developer or toner concentration sensor)
Copy Start key ON
Rotates the photosensitive drum.
Forms a sample image on the photosensitive drum.
LED ON (shines on the photosensitive drum)
Measures the concentration of developer for copying operation (SGNL-K/D) and
Measures the reference (REF-K/D) for copying operation.*
Compares the initial data and copy data, and
Computes the change in toner concentration

*When measuring the concentration of color toner, SGNL-M/C/Y and REF-M/C/Y are measured.

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Each item of measurement data may be checked in service mode as follows:

Item	Description	Adjustment value
SGNL-K	Bk toner concentration signal (Bk-SGNL)	375±35
SGNL-D		614±21
REF-K	Bk reference signal (Bk-REF)	818±41
REF-D		818±41

Table6-405

Reference:

Unlike Y, M, or C toner, the copier's black toner absorbs near infrared light. As such, the amount of black toner inside the developer cannot be detected by shining near infrared light to the developer.

The photosensitive drum, on the other hand, reflects near infrared light, and shining infrared light to a black toner image on the photosensitive drum will enable detection of the concentration of toner.

The density of a black toner image will decrease (lighter) as the amount of black toner inside the developer decreases, and the degree of reflected light will increase.

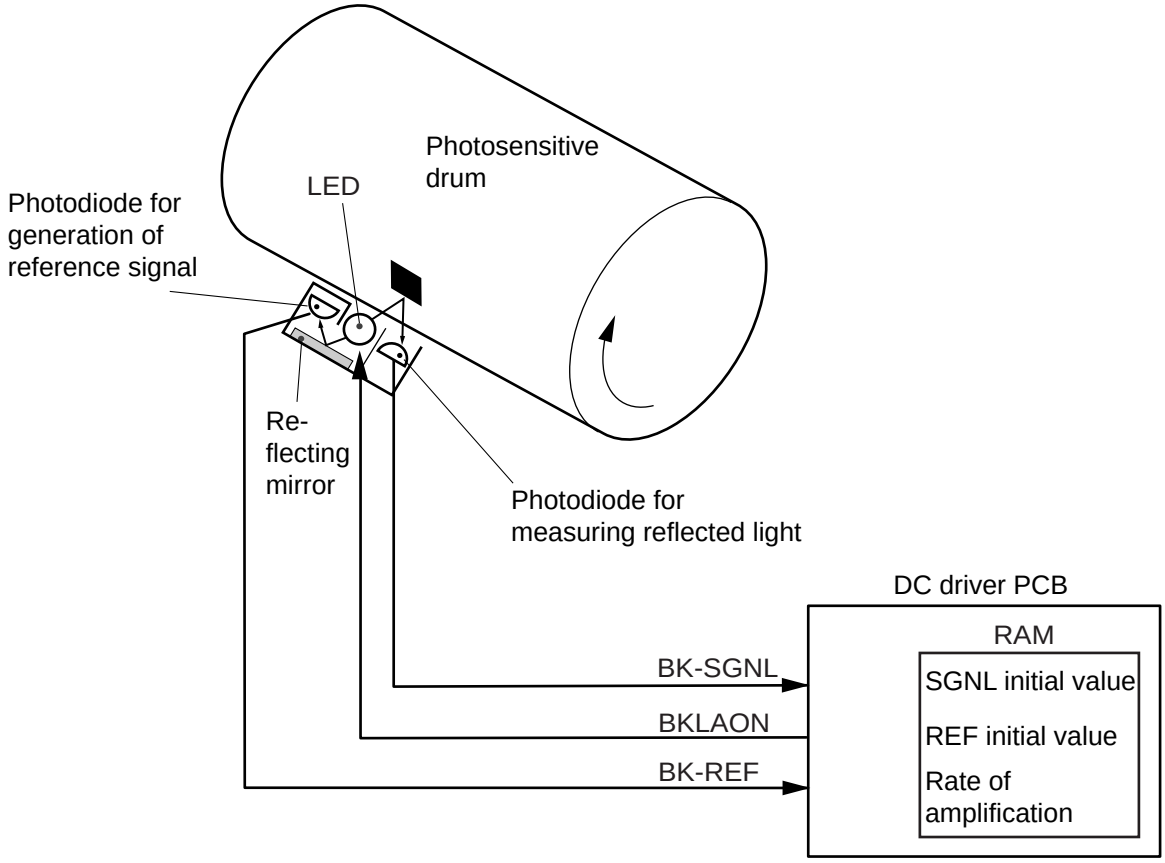

Figure 6-405

When measuring the concentration of black toner during copying operation, it is necessary to prerent adhesion of toner on the photosensitive drum to the transfer sheet. To prevent such a problem, the CPU PCB controls the timing at which the laser is turned on so that the black toner image will come face-to-face with the metal transfer sheet.

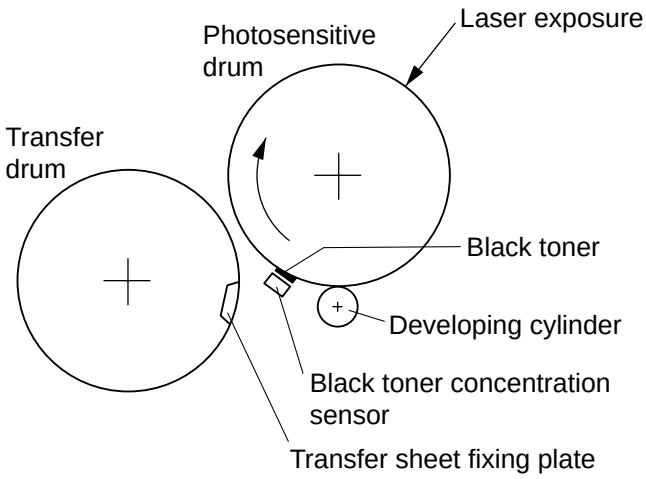

Figure 6-406

4. Detecting Dirt on the Window

The LED is turned on when the power switch is turned on or while control rotation (CNTR) takes place during copying operation to measure Bk-SGNL without toner on the photosensitive drum.

The level of Bk-SGNL is low if the sensor window is soiled. The ratio between the level of Bk-SGNL and a predetermined value is stored in memory and used to correct the output of the sensor while controlling the concentration of the toner inside the black developing assembly.

If the level of Bk-SGNL is ±30% or more of a predetermined level, the copier will indicate 'E020'.

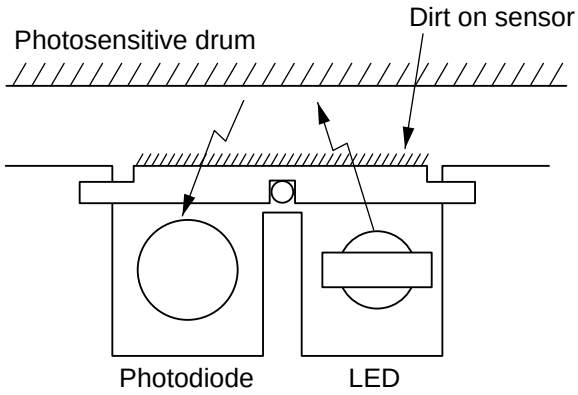

Figure 6-407

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5. Sequence of Operations (measurement)

Patch detection using the Bk toner sensor to determine the amount of toner to supply is executed for each copy as follows:

1. When copying on side B, a patch is formed in the area that faces the linking plate along the trailing edge of the image.
2. When copying on side B, a patch is formed in the area that faces the linking plate along the leading edge of the image.

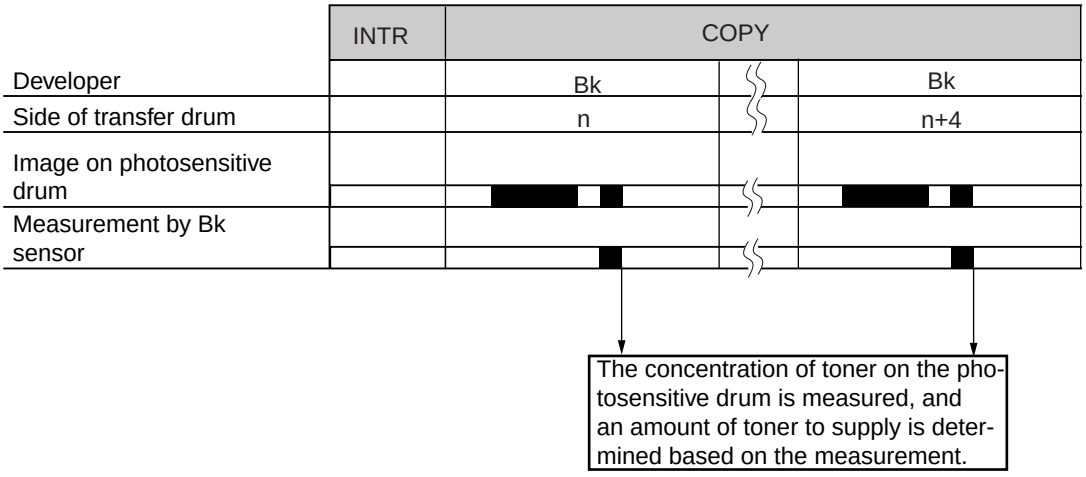

Figure 6-408 Using Side B

6. Error Code (E020) Related to Control of Toner Concentration

'E020' is used to indicate a fault associated with the concentration of toner. ATR control uses different methods for Bk and M/C/Y, and the following two types of control are performed for each:

1. Controlling the concentration of toner to the initial setting at time of installation and replacement of developer.
2. Controlling the concentration of toner inside the developing assembly to a constant level during copying sequence.

ATR is explained below in terms of ATR associated with the black toner concentration sensor and the color (M/C/Y) toner concentration sensor and in terms of when 'E020' and its detailed code are indicated.

a. Flow of toner supply control in the hopper assembly and its related detail code
b. Flow of initial setting control using the black toner concentration sensor and its related detail code (at time of replacement of developer)
c. Flow of initial setting control using the color toner concentration sensor and its related detail code (at time of replacement of developer)
d. Flow of control using the black toner concentration sensor at power-on and its related detail code
e. Flow of control using the black toner concentration sensor during copying operation and its related detail code
f. Flow of control using the color toner concentration sensor during copying operation and its related detail code

a. Flow of Toner Supply Control in the Hopper Assembly and Its Related Detail Code

Initial settings	Flow of operation	Detail code	Items of detection
1. During copying operation	During copying operation, the toner supply clutch is off.	00FF	Hopper motor error
2. During copying operation (during toner supply)	During copying operation, the toner supply clutch is on and the hopper is supplying the developing assembly with toner.	01FF	The M hopper is not supplying toner.
		02FF	The C hopper is not supplying toner.
		03FF	The Y hopper is not supplying toner.
		04FF	The Bk hopper is not supplying toner.

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b. Flow of initial setting control using the black toner concentration sensor and its related detail code (at time of replacement of developer)

(The notation "xx" in detail code indicates the color of the developing assembly; i.e., xx=02: C, xx=03: Y, xx=04: Bk.)

Initial settings	Flow of operation	Detail code	Items of detection
1. Feeding developer	Feeds developer to the developing assembly. (FUNCTION>INSTALL> SPLY-K)	—	
2. Stirring	Stirs the developer inside the developing assembly. (FUNCTION>INSTALL> STIR)	—	
3. Reading initial settings	(FUNCTION>INSTALL> INIT-K)	—	
3.1 Idle rotation for 30 sec	Stirs the developer inside the developing assembly.		
3.2 Setting SGAIN-K, RGAIN-K	LED on; uses PS1/2 to check light; converts light into voltage to set gain.	0400	The PS2 connector is disconnected. The PS1 connector is disconnected.
	RGAIN-K: set to 4 V (PS1)	0401	SGAN cannot be set. RGAIN cannot be set.
	SGAIN-K: set to 3 V (PS2)	0440 0441	
3.3 Reading SGNL-D, REF-D	LED on; uses PS1/2 to check light; converts light into voltage to set the following: REF-D (PS1) SGNL-D (PS2)		
3.4 Reading SGNL-M/ C/Y/K, REF-M/C/ Y/K	As many as 16 patches are formed on the photosensitive drum, are measured by PS1 to set the following: REF-M/C/Y/K (PS1) SGNL-M/C/Y/K (PS2)	XX15 XX17 XX23 XX33	The level of variation in one sample of REF-xx is 35 or higher. The level of variation in 16 samples of REF-xx is 70 or higher. The initial value is 777 or lower. The initial value is 859 or higher.

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Initial settings	Flow of operation	Detail code	Items of detection
3.5 End/ reading once again	Ends the operation if the measurement of SGNL-K is as indicated; otherwise, goes to 3.4 "Reading SGNL-M/C/Y/K, REF-M/C/Y/K."	XX14	The level of variation in one sample of SGNL-xx is 51 or higher.
		XX16	The level of variation in 16 sample of SGNL-xx is 102 or higher.
		0424	The initial value is 305 or lower.
		0434	The initial value is 371 or higher.
		XX25	The initial value of SGNL-M/C/Y that has been read is 683 or lower.
		XX32	The initial value of SGNL-M/C/Y that has been read is 930 or higher.
		0432	The initial value of SGNL-K that has been read is 550 or higher.
		XX34	The initial value of SGNL-M/C/Y that has been read is 749 or higher.

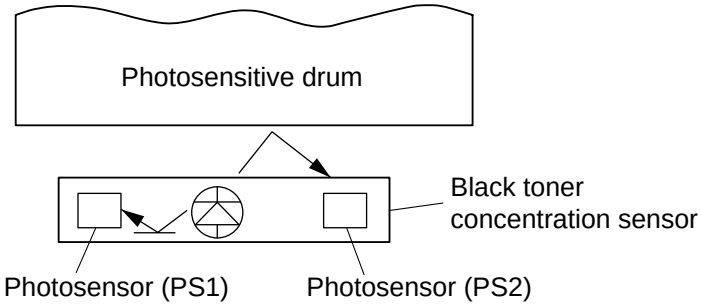

Figure 6-409

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c. Flow of Initial Setting Control Using the Color Toner Concentration Sensor and Its Related Detail Code (at time of replacement of developer)

(The notation "xx" in detail code indicates the color of the developing assembly; i.e., xx=02: C, xx=03: Y)

Initial setting	Flow of operation	Detail code	Item of detection
1. Feeding developer	Feeds developer to the developing assembly. (FUNCTION>INSTALL>SPLY-x)	—	
2. Stirring	Stirs the developer inside the developing assembly. (FUNCTION>INSTALL>STIR-x)	—	
3. Reading initial value	(FUNCTION>INSTALL>INIT-x)	—	
3.1 Idle rotation (30 sec)	Stirs the developer inside the developing assembly.	—	
3.2 Reading reference signal REF-M/C/Y	LED on; uses PS1 to check light; converts light into voltage to set the following: REF-M/C/Y (PS1)	xx00 xx11 xx21 xx31	The PS2 connector is disconnected. The level of variation in one sample is 35 or higher. The value of REF-M/C/Y is 200 or lower. The level of REF-M/C/Y is 930 or higher.
3.3 Reading gain SGAIN-M/C/Y	LED on; uses PS1 to check light; converts light into voltage to set gain. SGAIN-M/C/Y: set to 4 V	xx40	The gain cannot be set.
3.4 Reading initial value SGNL-M/C/Y	LED on; uses PS2 to check light; converts light into voltage to set the following: SGNL-M/C/Y (PS2)	xx10 xx13 xx20 xx30	The level of variation in one sample of SGML-M/C/Y is 35 or higher. The level of variation in 10 samples of SGML-M/C/Y is 70 or higher. The value SGML-M/C/Y is 777 or lower. The value of SGML-M/C/Y is 859 or higher.

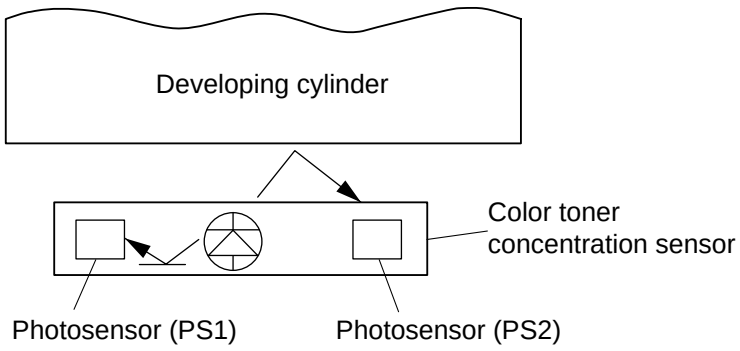

Figure 6-410

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d. Flow of Control Using the Black Toner Concentration Sensor at Power-On and Its Related Detail Code

Flow at power-on	Flow of operation	Detail code	Item of detection
1. Turning on the power switch	—	—	
2. Detecting dirt on window	(during initial rotation)	—	
2.1Reading SGNK-D	Black tone sensor LED on; uses PS1 and PS2 to check light; converts light into voltage.	—	
2.2Making a comparison and computation	Compares 'SGNK-D' and 'REF-D' effective at time of initial setting and 'SGNK-D' and 'REF-D' read in 2.1 to compute the window soiling correction value for the black toner sensor.	0465 0475	The level of soiling of the window is 130 or higher. The level of soiling of the widow is 70 or less.

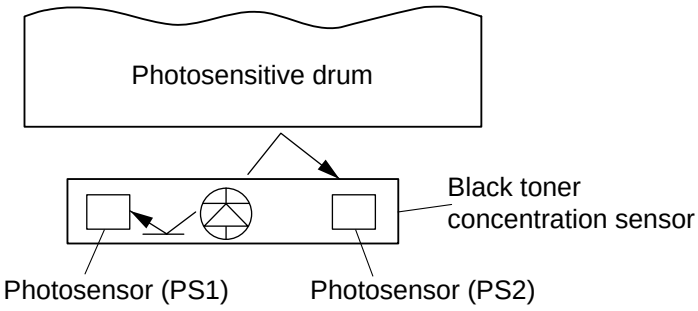

figure 6-411

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e. Flow of Control Using the Black Toner Concentration Sensor during Copying Operation and Its Relate Detail Code

Flow at power-on	Flow of operation	Detail code	Item of detection
1. Starting copying operation	(Copy Start key ON)	—	
2. Checking the connector (disconnection)	—	xx00	The PS/PS2 connector is disconnected.
3. Detecting dirt on the window	(during initial rotation)	xx80 xx81	The reading is 130 or higher. The reading is 70 or lower.
4. Forming a black patch on the photosensitive drum	Forms a patch in the area coming face-to-face against the linking plate of the transfer drum.	—	
5. Measuring concentration	The density of the patch is measured.	— xx91	 The level of variation of one sample is 102 or higher.
5.1 Reading REF-xx	LED on; uses PS1 to check light; converts light into voltage.	xxA1	The reading is 30% or more lower than the initial setting REF-xx.
5.2 Making a comparison and computation	Compares ‘REF-xx’ (initial setting) and ‘REF-xx’ read in 5.1.	xxB1 xx62 xx72	The reading is 30% or more higher than the initial setting REF-xx. The initial setting is 777 or lower. The initial setting is 859 or higher.

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Flow at power-on	Flow of operation	Detail code	Item of detection
5.3 Reading SGNL-K	LED on; uses PS1 to check light; converts light into voltage.	xx92	The level of variation to one sample is 102 or nigher.
		xxA4	The reading is 51 or lower.
		04B2	The reading is 550 or higher.
		xxB2	The reading is 1020 or higher.
		0463	The initial setting is 305 or lower.
5.4 Making a comparison and computation	Compares the initial setting SGNL-xx and SGNL-K read in 5.3.	0473	The initial setting is 371 or higher.
		04C0	The result is +3.00% or higher 20 times or more continuously compared with the initial setting SGNL-K.
		04D0	The result is -3.00% or lower 20 times or more continuously compared with the initial setting SGNL-K.
		04E0	The result is -5% or higher compared with the initial setting SGNL-K.
		xx63	The initial setting is 683 or lower.
		xx66	The result of computation is 700 or lower.
		xx73	The initial setting is 749 or higher.
		xx77	The result of computation is 930 or higher.

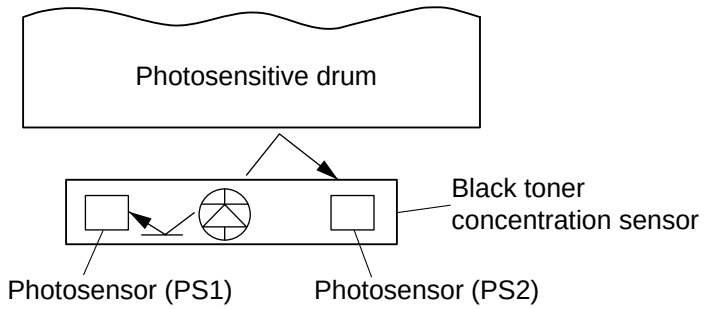

figure 6-412

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f. Flow of Control Using the Color Toner Concentration Sensor during Copying Operation and Its Related Code

(The notation "xx" of detail code indicates the color of developing assembly; e.g., xx=01: M, xx=02: Y, xx=03: Y)

Initial setting	Flow of operation	Detail code	Items of detection
1. Starting copying operation	(Copy Start key ON)	—	
2. Checking the connector (disconnection)	—	xx00	The PS1/PS2 connector is disconnected.
3. Measuring the concentration	Measures the concentration of developer.	—	
3.1 Reading REF- M/C/Y	LED on; uses PS1 to check light; converts intensity into voltage.	xx91	The level of variation in one sample is 102 or higher.
3.2 Making a comparison and computation	Compares the initial setting REF-M/C/Y and REF-M/C/Y read in 3.1.	xxA1	The result is 30% or more lower than the initial setting REF-M/C/Y.
		xxB1	The result is 30% or more higher than the initial setting REF-M/C/Y.
		xx61	The initial setting is 200 or lower.
		xx71	The initial setting is 930 or higher.
3.3 Reading SGNL-M/C/Y	LED on; uses PS2 to check light; converts light into voltage.	xx90	The level of variation in one sample is 102 or higher.
		xxA0	The reading is 306 or lower.
		xxB0	The reading is 1020 or higher and continues to be so 10 times or more.
3.4 Making a comparison and computation	Compares the initial setting SGNL-M/C/Y and SGNL-M/C/Y read in 3.3.	xx60	The reading is 777 or lower.
		xx70	The reading is 859 or higher.
		xxC0	The result is +3.00% or higher 20 times or more continuously as compared with the initial setting SGNL-M/C/Y.
		xxD0	The result is -3.00% or lower 20 times or more continuously as compared with the initial setting SGNL-M/C/Y.
		xxE0	The result is -5% or higher than the initial setting SGN-M/C/Y.

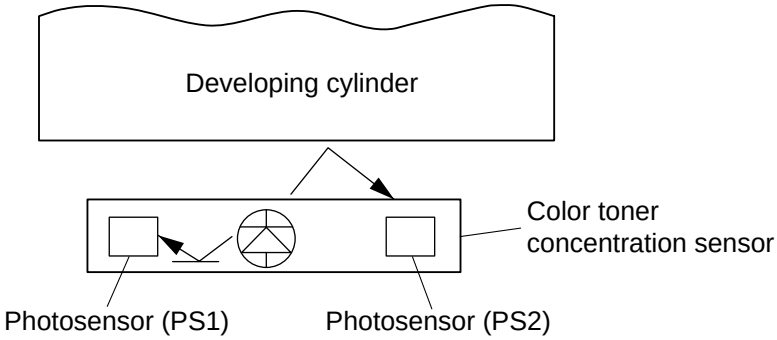

Figure 6-413

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E. Supplying Toner

The copier is equipped with four hoppers (M, C, Y, and Bk), each one operating when its respective toner supply clutch turns on to supply the respective developing assembly with toner.

Item	Description
Hopper motor (M10)	DC motor
Toner level sensor	Piezoelectric oscillator
Add Toner indicator	Turns on the control panel at the end of copying operation

Table 6-406

The hopper motor rotates in reverse for the following to stir the inside of the hopper:
1. When FUNCTION>INSTALL>HP-STIR-4 is executed in service mode after replacement of the developer (for about 2 min and 30 sec).
2. When a toner absent condition is ended at the end of toner supply operation and the right front cover is closed (for about 30 sec).

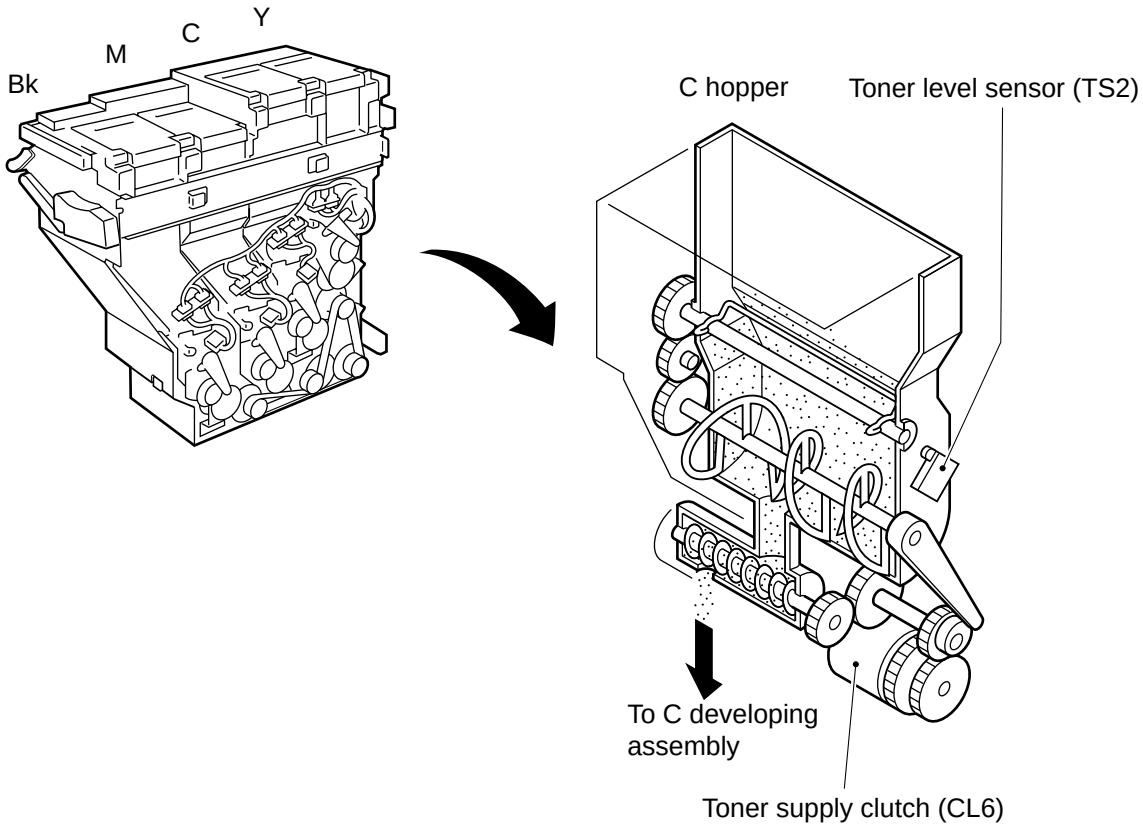

Figure 6-414

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V. PHOTOSENSITIVE DRUM CLEANER ASSEMBLY

A. Outline

The major functions of the photosensitive drum cleaner assembly are as follows:
1. Controlling the reciprocating mechanism of the cleaning blade.
2. Controlling the collection of waste toner.

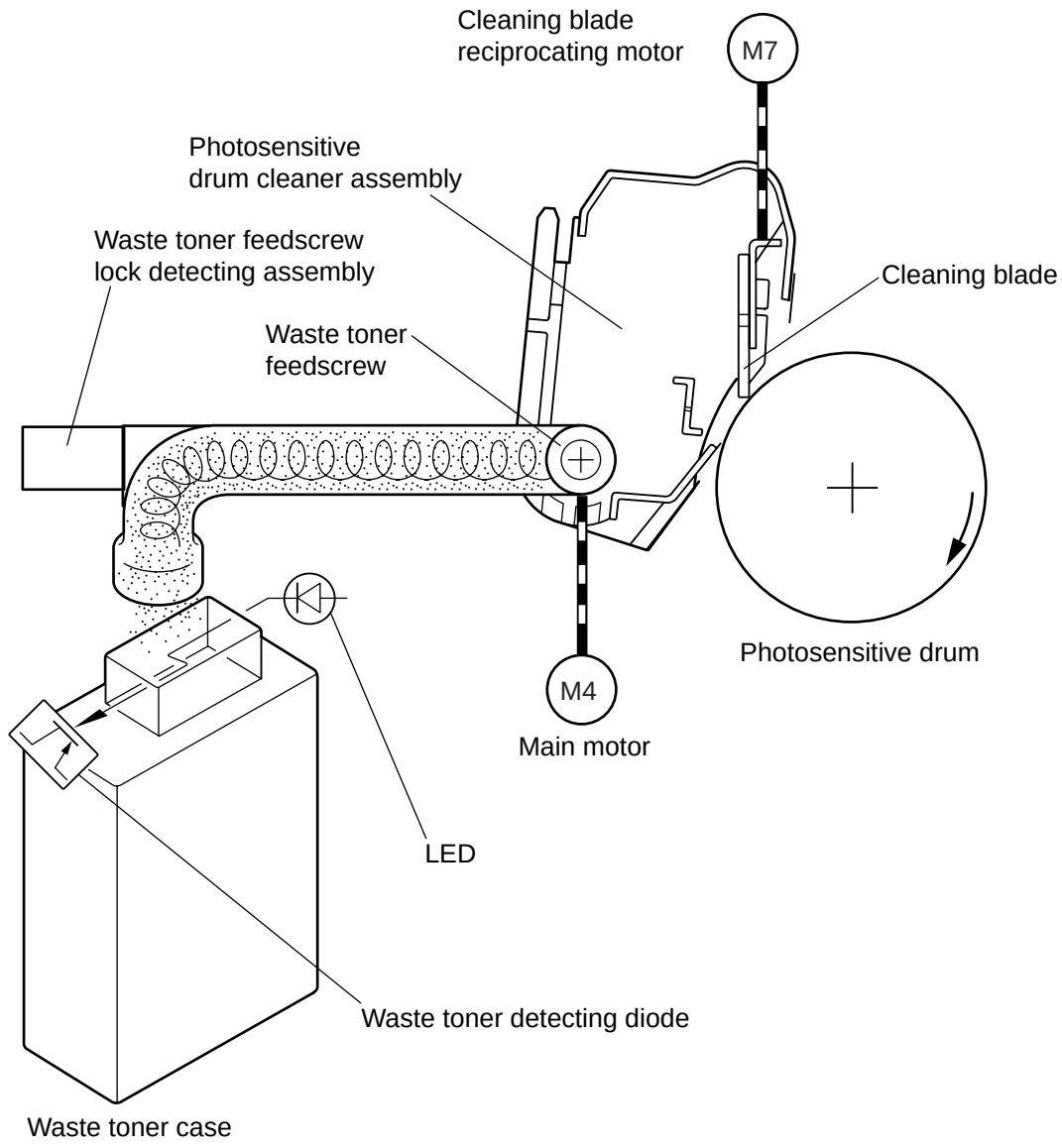

Figure 6-501

B. Controlling the Reciprocating Mechanism of the Cleaning Blade

The reciprocating mechanism for the cleaning blade is turned on for the following:
1. To remove foreign matter (paper lint) clogging the gap between the cleaning blade and the photosensitive drum.
2. Reducing adhesion of toner on the cleaning blade or the photosensitive drum.

Item	Description
Reciprocating stroke	Moves from the center to the left/right 2 mm (distance of 4 mm).
Reciprocating movement	Moves from the center to the right, to the left, and then to the center.
Timing of operation	During last rotation of each copying operation

Table 6-501

C. Controlling the Collection of Waste Toner

1. Checking the Waste Toner Case (full)

The detection mechanism used to find out whether the waste toner case is full consists of the following:

Item	Description
Sensor	Transmission type sensor (LED + phototransistor)
Waste Toner Case Full message	Indicated on the control panel at the end of copying operation
Waste toner case capacity	Equivalent of about 20,000 sheets/A4 (varies depending on the type of original)

Table 6-502

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2. Detecting a Waste Toner Feedscrew Lock Condition

If the waste toner feedscrew is prevented from rotation because of some fault, waste toner could leak from the drum cleaning assembly. To prevent such a problem, the waster toner feedscrew locking switch (SW7) is used to detect a feedscrew lock condition.

Related Error Code
E013
This error code is indicated when SW7 is pushed by gear A.

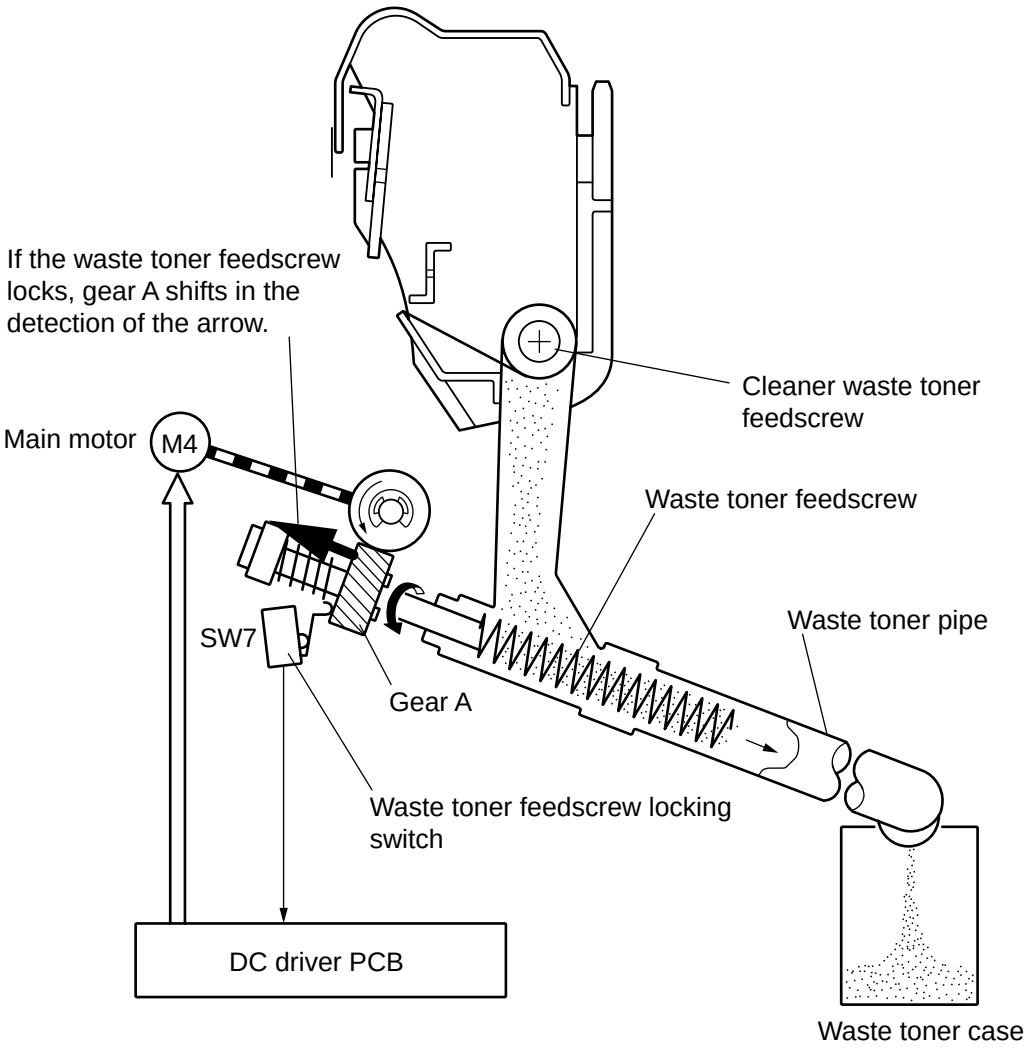

Figure 6-502

VI. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (Do not insert a screwdriver or the like into the laser path.)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum.
   The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Photosensitive Drum Assembly

1. Construction

[1] Photosensitive drum cleaner
[2] Post-cleaning
[3] Pre-exposure lamp
[4] Primary charging assembly
[5] Photosensitive drum

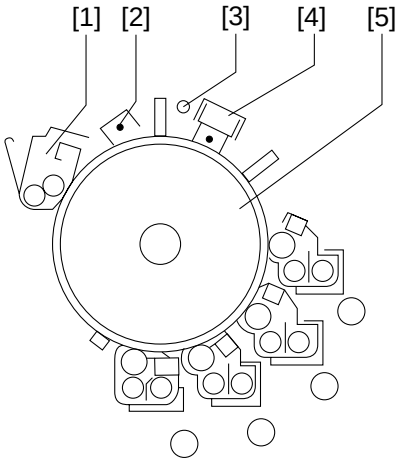

Figure 6-601

2. Removing the Photosensitive Drum

1) Turn off the power switch, and disconnect the power plug.
2) Open the front cover (left, right), and remove the two screws [1]; then, detach the two hopper unit stopper metal fixings.
3) Open the hopper unit fully.
4) Remove the transfer drum rotating knob, and detach the transfer cover.
5) Remove the developing assemblies (Bk, M, C, Y).
6) Remove the primary charging assembly.
7) Remove the post-cleaning charging assembly.
8) Free the photosensitive drum cleaning blade from the photosensitive drum.
9) Remove the cleaner unit.
10) Remove the two screws [2], and disconnect the connector [3]; then, detach the pre-cleaning paper sensor [4].

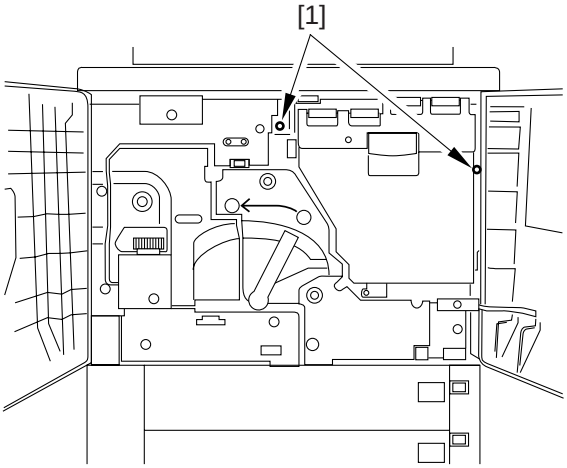

Figure 6-602

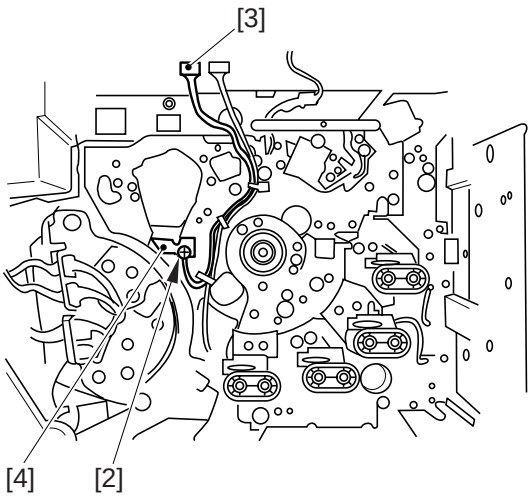

Figure 6-603

Caution:
When fitting the pre-cleaning sensor to the copier, be sure to hold it horizontal in relation to the copier's rails, taking care not to damage the photosensitive drum.

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Caution:
See to it that the removed developing assembly will remain free of foreign matter.
Do not place the developing assembly near the copier and handle the transfer assembly frame or the photosensitive drum frame unit above it.

11) Remove the black toner concentration sensor unit.
12) Remove the screw [5], and detach the photosensitive drum positioning roll [6].

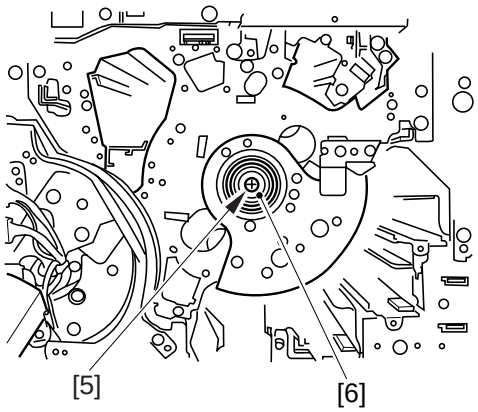

Figure 6-604

13) Remove the three screws [7]; then, loosen the two fixing pins [8], and slide out the photosensitive drum frame unit [9].

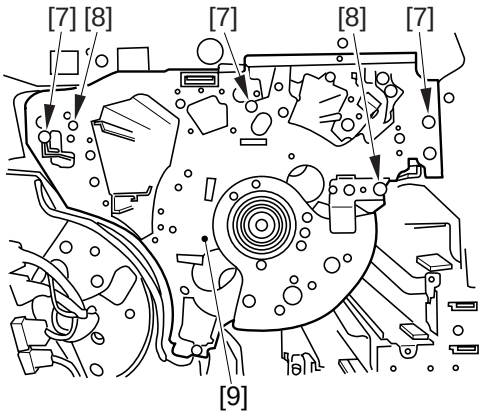

Figure 6-605

Caution:
When sliding out the photosensitive drum frame unit, be sure to work with extra care so as not to damage the photosensitive drum.
If contact is made near the front, lift it slightly to remove. At this time, check to make sure that the transfer assembly frame unit is inside the copier.

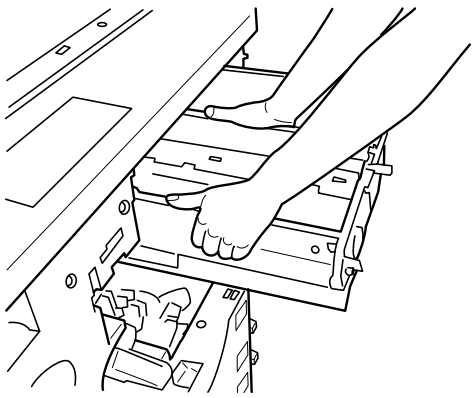

Figure 6-606

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14) Place the photosensitive drum unit as shown.

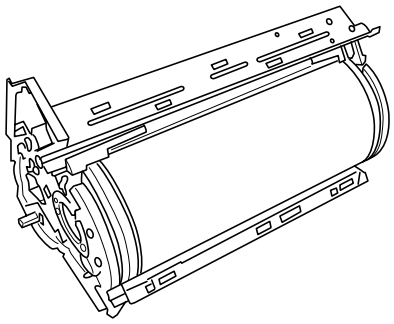

Figure 6-607

15) Place copy paper over the photosensitive drum as shown.
16) Remove the screw [10], and remove the fixing pin unit (right) [11].

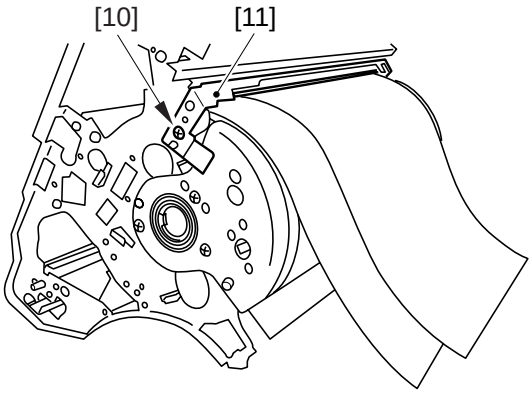

Figure 6-608

17) Remove the three screws [12], and remove the photosensitive drum butting block (front) [13].

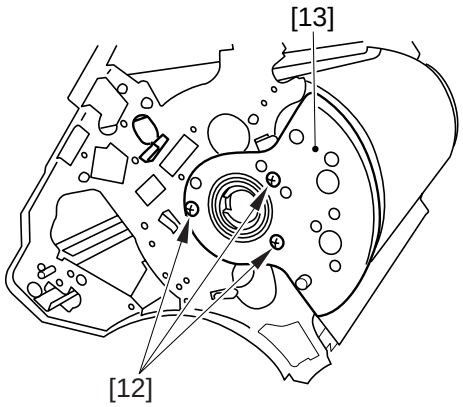

Figure 6-609

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18) Remove the threes screws [14], and detach the photosensitive drum butting block (rear) [15].

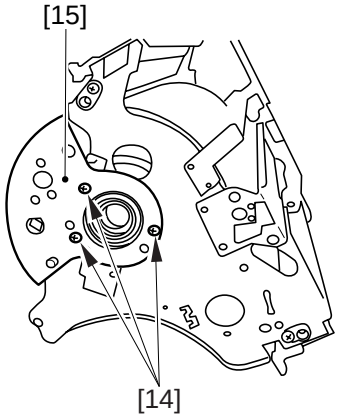

Figure 6-610

19) Lift the stopper plate [16], and remove the scraper plate [17].

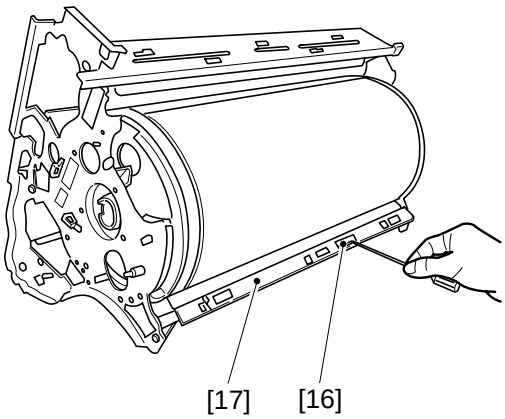

Figure 6-611

20) Avoiding the protrusion [18] on the flange at the rear of the photosensitive drum,, slide out the photosensitive drum unit slowly.

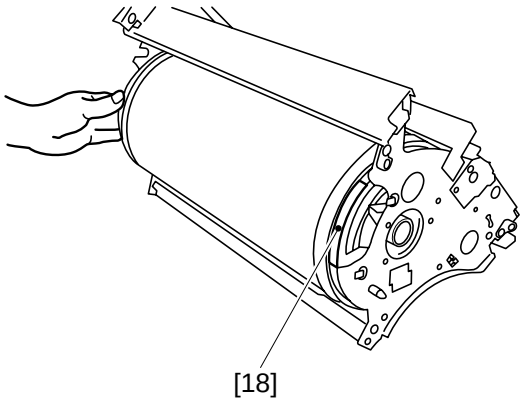

Figure 6-612

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Reference:

Hold it as shown for removal, thereby facilitating the work.

21) Place the photosensitive drum unit so that the protrusion on the flange at the rear is at the bottom (i.e., the drum heater friction plate is at the bottom).

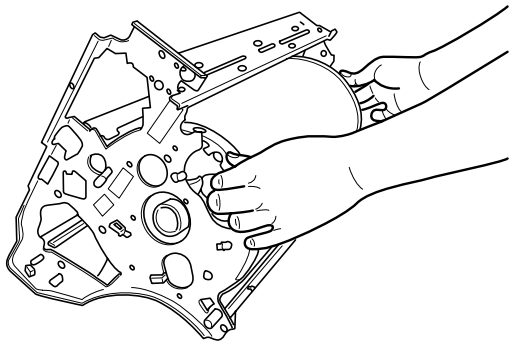

Figure 6-613

Caution:

The photosensitive drum is susceptible to light, and exposure to light for a long time can lead to white spots or black bands on copies.
Whenever you have removed the photosensitive drum from the copier, wrap it with the light-blocking sheet (or five to six sheets of fresh copy paper), and keep it in a dark place.

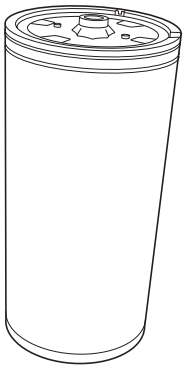

Figure 6-614

Reference:

If the photosensitive drum is exposed to light of 600 lux for 1 min and is kept in a dark place for 24 hr thereafter, it may recover to more or less normal condition (not affecting actual copies). Nevertheless, take care not to subject it to direct sunlight. (Rays of the sun typically are 10000 to 30000 lux.)

3. When Replacing the Photosensitive Drum

When installing a new photosensitive drum, perform the following:

1) Mount the new photosensitive drum.
2) Mount the primary charging assembly, post-cleaning charging assembly, photosensitive drum cleaner assembly, and developing assembly.

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3) Coat the No. 2 blade of the black toner concentration sensor assembly with drum cleaner lubricant (TKN-0480) in an even layer.
4) Coat the blade of the photosensitive drum cleaner assembly with drum cleaner lubricant (TKN-0480) in an even layer.
5) Dry wipe the sensor window of the black toner concentration sensor assembly, and mount the sensor.

Caution:

1. Shake the lubricant well before application.
2. Be sure to coat the side as well as the edge of the blade with lubricant.
3. Use light strokes when applying the lubricant to avoid chipping by excess force.
4. Keep in mind that, if the coating is not even, copies can start to show vertical white lines.
5. Do not use alcohol or solvent for cleaning. Further, take care so that the surface of the photosensitive drum will not come into contact with solvent.

6) Dry wipe the window of the cleaner front sensor.
7) Turn on the power switch so that the copier will be in standby state.
8) Select and execute FUNCTION>INSTALL>STIR-4 in service mode.
9) Select and execute FUNCTION>SENS-ADJ>CLN-OFST.
10) Record the value under ADJUST>SENS-ADJ>CLN-THE, CLN-TMP on the service label behind the right front cover.
11) Select and execute FUNCTION>INSTALL>INIT-D in service mode.

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4. Cleaning the Photosensitive Drum

If the surface of the photosensitive drum is soiled, wipe it with a flannel cloth coated with toner. (Do not use paper, lint-free or otherwise.)

Caution:

Do NOT dry wipe or do NOT clean with solvent.

Do NOT use drum cleaning powder.

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5. Removing the Drum Heater

1) Remove the photosensitive drum.
2) Remove the two screws (M4x12) [1], and detach the photosensitive drum flange (front) [2].

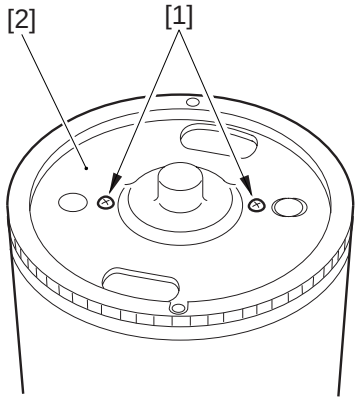

Figure 6-615

3) Disconnect the connector [3], and pull out the drum heater [4].

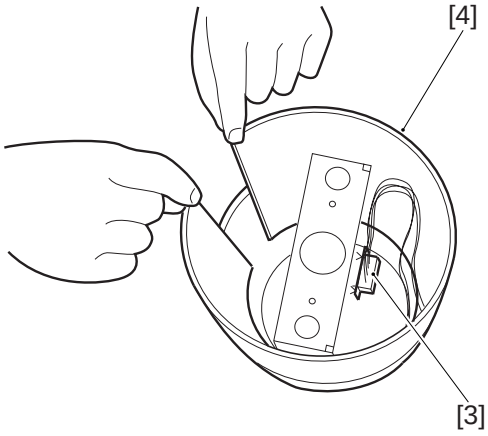

Figure 6-616

4) Lift off the photosensitive drum as shown.

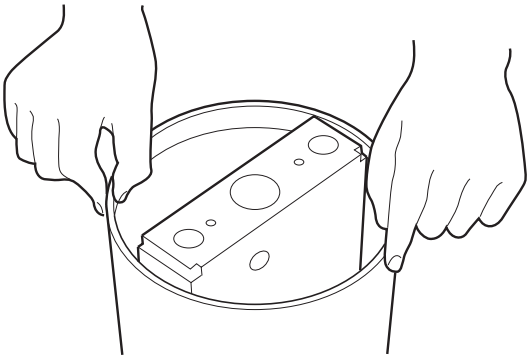

Figure 6-617

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Caution:
Do not apply grease or the like to the slip ring for the drum heater. In particular, do NOT use conductive grease.
If the slip ring friction side [5] has powder, dry wipe it lightly to remove.
Do not remove the material (black) that has caked on the slip ring friction side. It serves as lubricant.

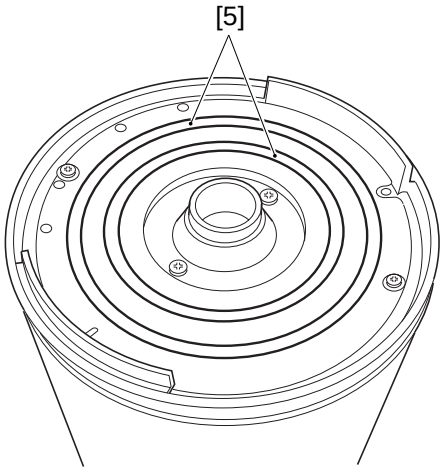

Figure 6-618

6. Removing the Drum Heater Brush

1) Remove the rear cover.
2) Remove the flywheel.
3) Remove the drum motor unit.
4) Remove the screw [1], and disconnect the two connectors [2]; then, detach the drum heater brush [3].

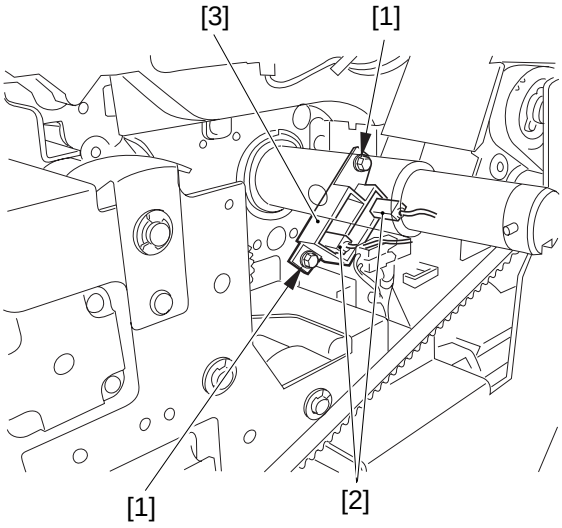

Figure 6-619

Caution:
Do NOT apply grease to the drum heater brush.

B. Pre-Exposure Lamp

1. Removing the Pre-Exposure Lamp Unit

1) Remove the photosensitive drum.
2) Disconnect the connector [1], and remove the screw [2]; then, detach the pre-exposure lamp [3].

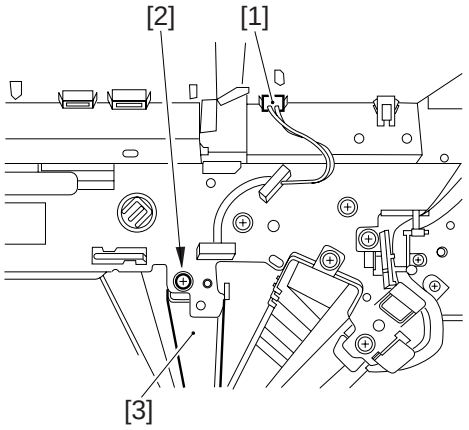

Figure 6-620

C. Charging Assembly

1. Outline

The copier has five charging assemblies equipped with charging wires, each of which is 0.06 mm in diameter.

2. Removing the Primary Charging Assembly

1) Open the hopper unit fully.
2) Disconnect the connector [1], and remove the screw [2]; then, detach the primary charging assembly [3].

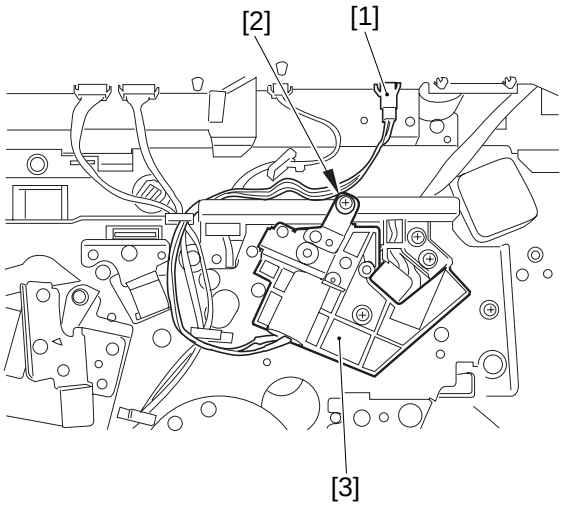

Figure 6-621

3. Removing the Grid Plate

1) Remove the primary charging assembly.
2) Remove the screw [1], and remove the grid plate [2].

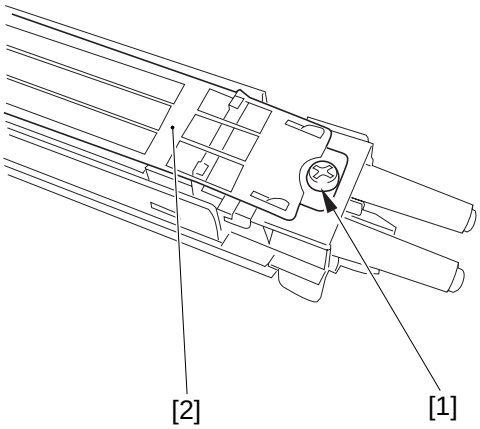

Figure 6-622

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4. Replacing the Wire Cleaning Pad of the Primary Charging Assembly

1) Remove the primary charging assembly.
2) Remove the two screws [1], and detach the shielding plate [2].

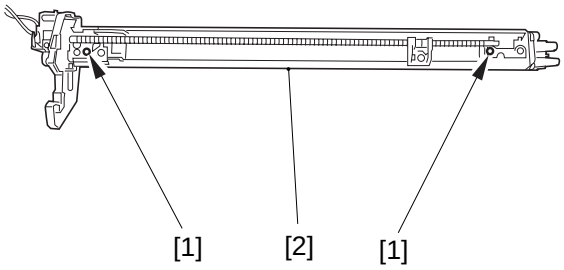

Figure 6-623

3) Pick the cleaning pad [3] to remove.

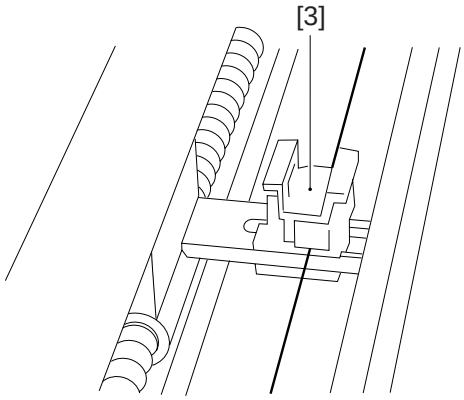

Figure 6-624

Caution:

Keep the following in mind for cleaning and checking the primary charging assembly:

- Make a thorough check to be sure that the block (front, rear) is free of melting by leakage, thermal deformation, caking, yellowing, or the like.
  If a fault is found, replace it with a new part without delay.
- Be sure to check the inside of the block (front, rear) as well as the outside.
- Do NOT use a cloth coated with metal powder.
- Do NOT use a moistened cloth. Dry wipe with lint-free paper, and use alcohol. Be sure that the alcohol has completely dried before fitting the part to the copier.
- Be sure to provide scheduled servicing and replacement at prescribed intervals.

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5. Removing the Post-Cleaning Charging Assembly

1) Open the hopper unit fully.
2) Remove the screw [1], and detach the post-cleaning assembly [2].

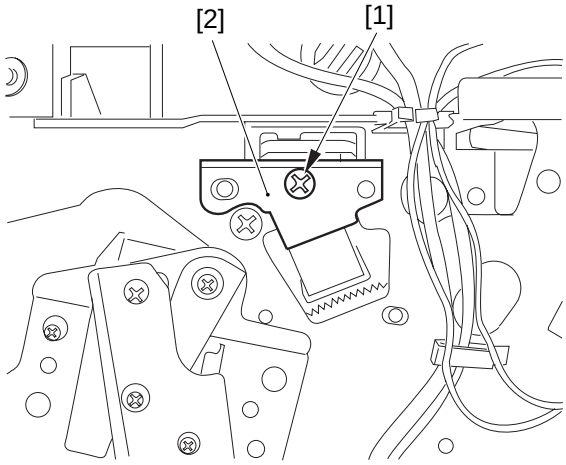


Figure 6-625

6. Adjusting the Height of the Charging Wire

The height of the charging wire may be adjusted by turning the screw found at the back of the charging assembly. A full turn of the screw shifts the position of the charging wire by about 0.7 mm.

The height of the charging wire of the internal static eliminator or the post-cleaning charging assembly, however, cannot be adjusted.

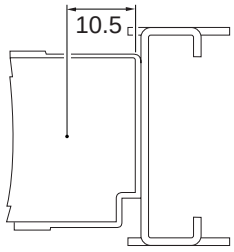
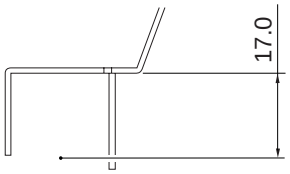
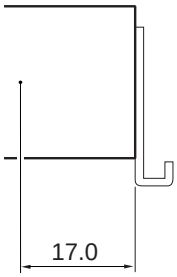
Charging assembly	Height of charging wire (mm)	Range of adjustment
Primary charging assembly		4 mm (approx.)
Separation charging assembly		4 mm (approx.)
External charging eliminator		4 mm (approx.)

Figure 6-626

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D. Developing Assemblies

1. Construction of the Y/M/C Developing Assembly

[1] Developing cylinder
[2] ATR sensor

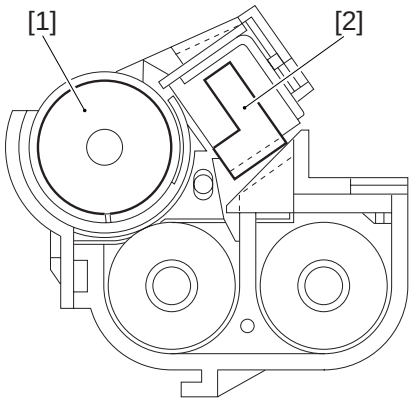

Figure 6-627

2. Construction of the Bk Developing Assembly

[1] Developing cylinder

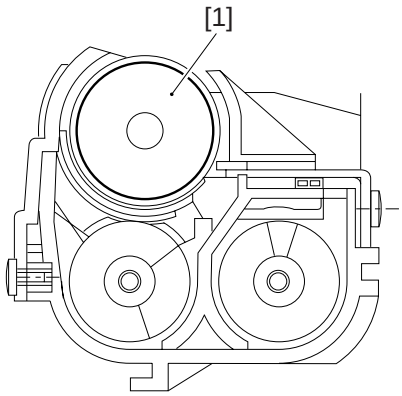

Figure 6-628

3. Removing the Developing Assembly

1) Open the right front cover.
2) Remove the two screws, and detach the hopper stopper plate; then, open the hopper fully.
3) Remove the Y/M/C developing assembly. Remove the screw [1], and disconnect the connector [2]; then, pull out the developing assembly slowly.
4) Remove the Bk developing assembly. Remove the screw [3], and pull out the developing assembly.

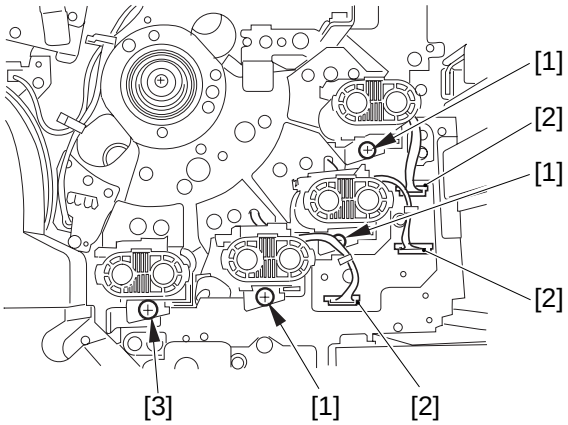

Figure 6-629

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Caution:

1. If you have disconnected a connector when removing the Y/M/C developing assembly, be sure to clean the inside of the ATR sensor connector.
2. When mounting a developing assembly to the copier, be sure to dry wipe its bias electrode with lint-free paper in advance to prevent developing faults.

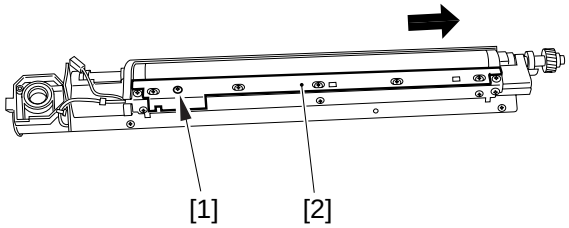

Figure 6-630

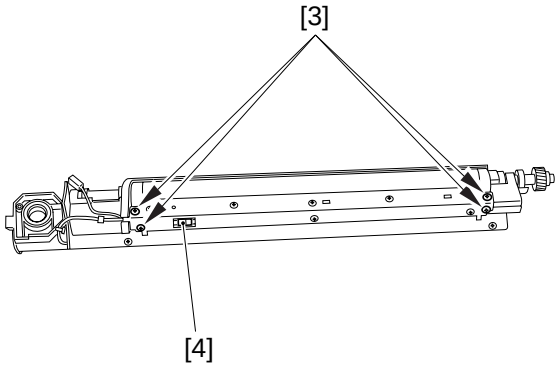

Figure 6-631

4. Removing the ATR Sensor of the Y/M/C Developing Assembly

1) Remove the Y/M/C developing assembly.
2) Remove the screw [1], and slide the developing blade cover [2] to the right to remove. (In the case of the Y developing assembly, slide it to the left.)

3) Remove the four screws [3], and disconnect the connector [4]; then, remove the developing blade unit.

Caution:

When assembling the parts, force down the developing blade unit, and screw it in place.

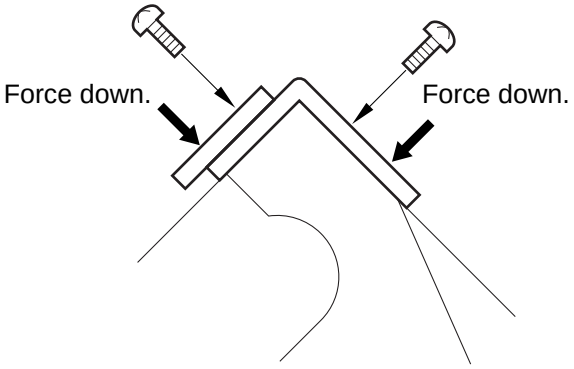

Figure 6-632

4) Remove the three screws [5], and detach the ATR sensor [6].

Caution:

If you have replaced the ATR sensor, be sure to replace the developer and select the appropriate concentration in service mode.

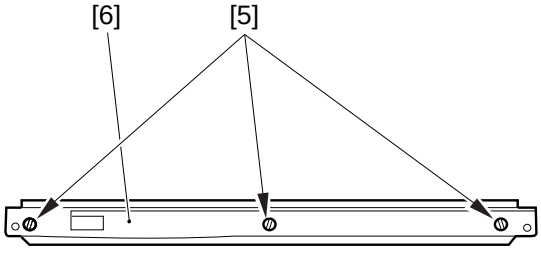

Figure 6-633

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5. Removing the Developing Cylinder

Basically, the same steps are performed for removal. The following uses the M developing assembly.

1) Remove the developing assembly.
2) Remove the screw (M3x4) [1], and detach the developing blade cover [2].

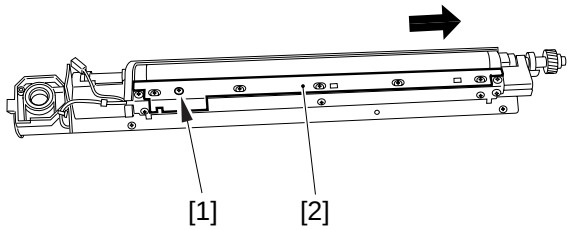

Figure 6-634

3) Remove the four screws (M3x6) [3], and disconnect the connector [4]; then, remove the developing blade unit.

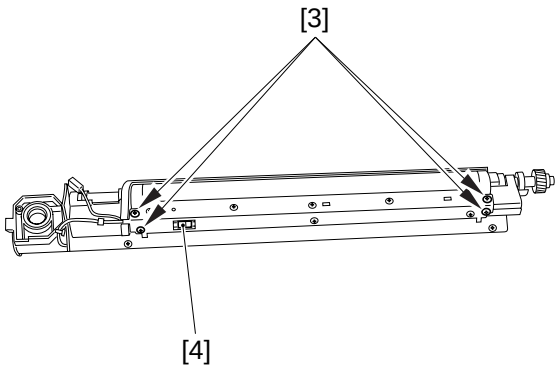

Figure 6-635

Caution:

When assembling the part, be sure to force down the developing blade unit, and screw it in place.

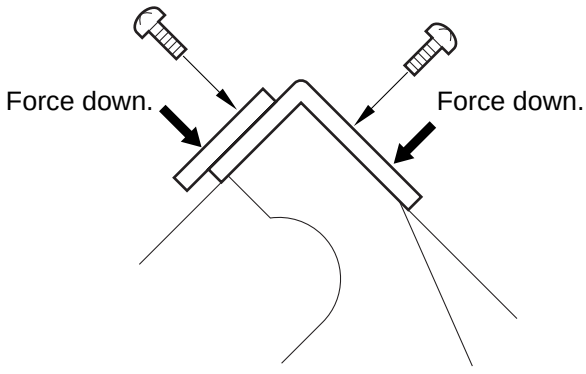

Figure 6-636

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4) Peel off the double-sided adhesive tape from under the gear cover sheet.
5) Remove the three screws [5], and detach the developing assembly lower cover [6]. The screw identified as [5a] is tightened over the white line.

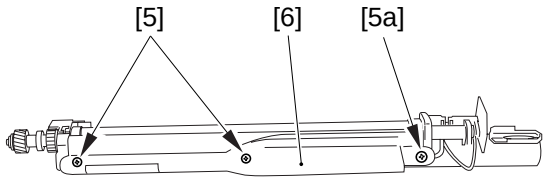

Figure 6-637

6) Remove the resin screw [7] found at the front of the developing assembly, and detach the electrode plate cover [8].

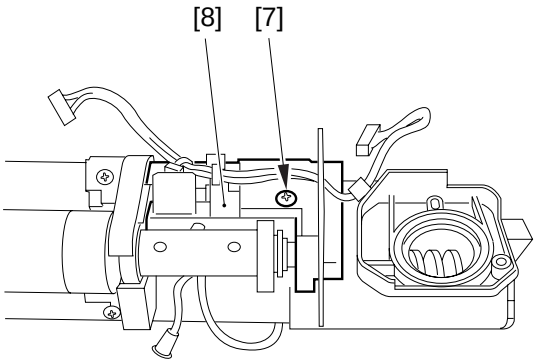

Figure 6-638

7) Remove the two screws [9]; then, detach the bias wire [10] and the electrode [11] of the developing cylinder.

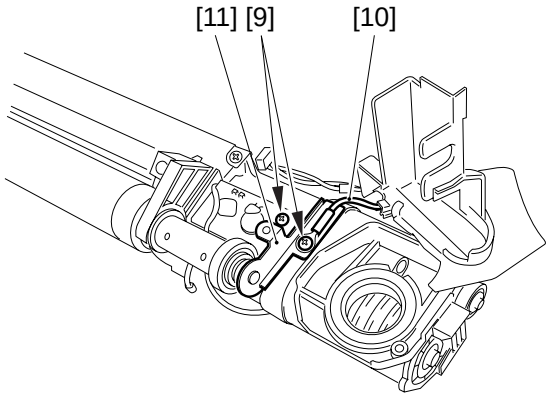

Figure 6-639

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8) Remove the grip ring [12], washer [13], butting roll [14], and spacer [15].

Caution:
When assembling the part, be sure to leave a gap of 0.2 ±0.1 mm between the roll [4] and the washer [13].

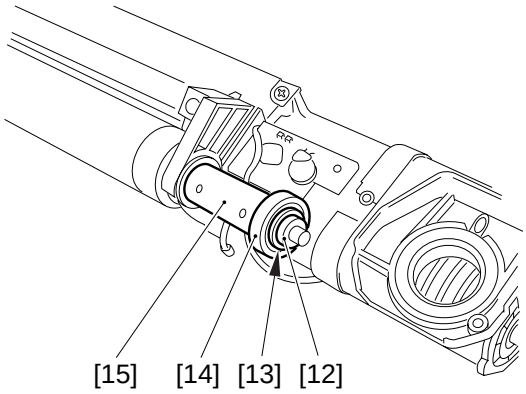

Figure 6-640

9) Remove the E-ring [16], grip ring [17], two gears [18], bearing [19], and sleeve slider [20] at the rear of the developing assembly.

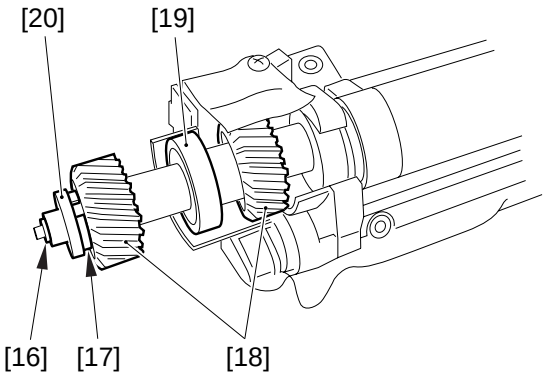

Figure 6-641

Caution:
When assembling the part, be sure there is NO gap between the gear [18] and the grip ring [19].

10) Remove the two screws [21] at the rear of the developing assembly, and detach the gear cover [22].

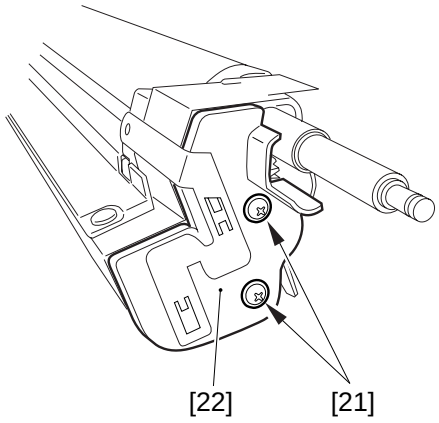

Figure 6-642

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11) Remove the gear [23].

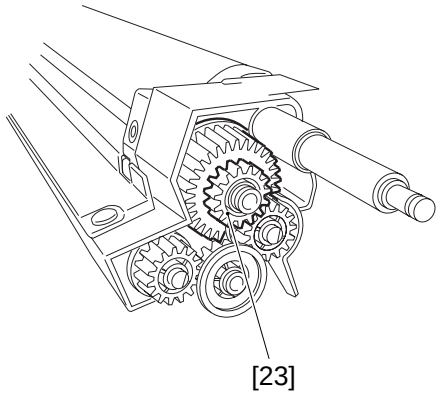

Figure 6-643

12) Shift the bearings [24] found on both ends of the developing cylinder in the direction of the arrow, and pull off the cylinder [25].

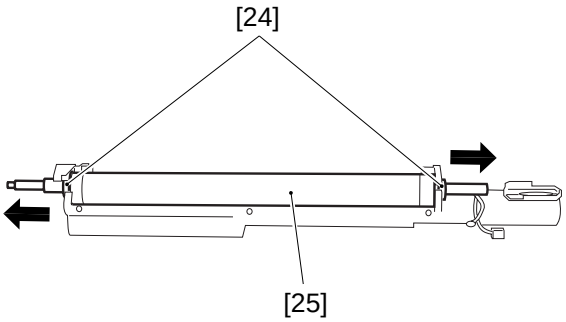

Figure 6-644

Caution:

While butting the bearing against the wall X1 of the case, force the sleeve in the direction of Y and mount the grip ring Z1, making sure there is no gap.
In this condition, butt the opposite bearing against the wall X2 of the case, and mount the grip ring so that the gap between the roll and the washer is 0.2 ±0.1 mm.

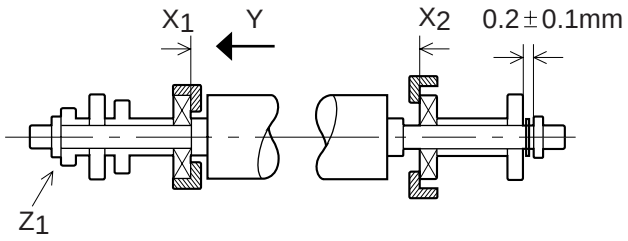

Figure 6-645

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6. Adjusting the S-B Gap

If you have replaced the developing blade, make adjustments using the S-B gap gauge (FY9-3044-000). See the following for the S-B gap of each sleeve:

Developer color	S-B gap
Yellow	0.62mm
Cyan	0.74mm
Magenta	0.74mm
Black	0.48mm

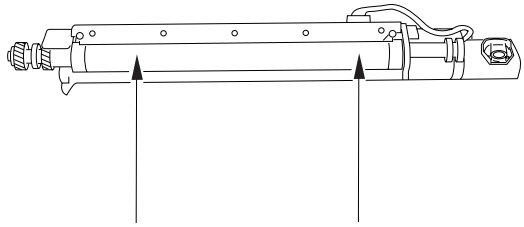

Figure 6-646

Insert two gauges (see the guide above for each color; on both ends) into the gaps between the developing blade and the sleeve, and secure the developing blade in place.

Caution:

If you insert the developing assembly at an angle, its gear at the rear can damage the photosensitive drum.
When inserting the developing assembly, be sure that it is horizontal in relation to the rails, and take extra care not to bring it in contact with the drum.
Further, when inserting the black developing assembly, be sure that it will not ride over the rails.

7. Replacing the Developer

1) Open the hopper unit fully.
2) Put a plastic bag [1] against the discharge opening. (An appreciable amount of developer will fall out.)
3) Remove the cap [2] of the discharge opening found at the lower front of the developing assembly whose developer is to be replaced.

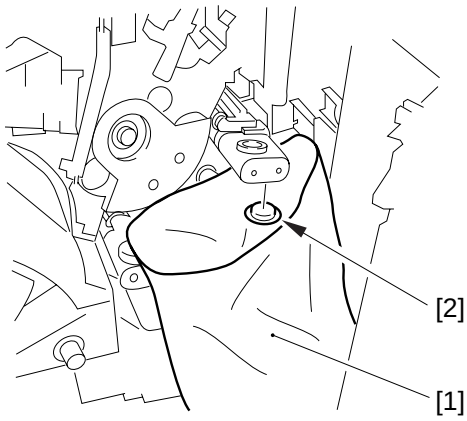

Figure 6-647

4) Select FUNCTION>INSTALL in service mode.
5) While keeping the plastic bag against the discharge opening, press RECV-M/C/Y/K in service mode (selected according to the color of the developer to replace).
   · When developer stops pouring out, press the Stop key to end the operation.
6) Fit the cap to the discharge opening.
7) Remove the screw, and detach the developing assembly.
   · To remove the M/Y/C developing assembly, disconnect the connector also.
8) Remove the cap from the discharge opening, and turn the gear by hand while tilting the developing assembly so as to remove all remaining developer.
   Tilt the developing assembly farther and farther while turning the gear, ultimately holding it upright.
9) Fit the cap to the discharge opening.
10) Mount the developing assembly to the copier.
11) When the copier ends the wait-up period, select FUNCTION>INSTALL in service mode.
12) Press SPLY-M/C/Y/K (according to the color of developer you have replaced).
13) The developing assembly will be locked in position, and the screw inside it will start to rotate. (about 10 sec)
14) Fit the developer supply funnel that comes with the copier against the supply opening of the developing assembly.

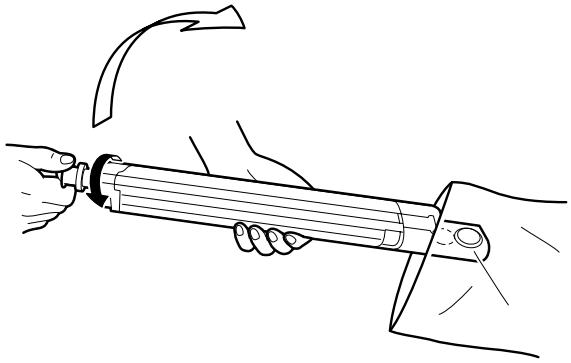

Figure 6-648

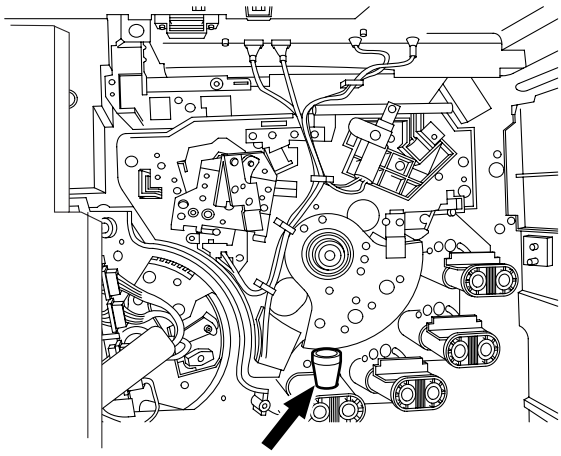

Figure 6-649

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15) Pour the developer into the developing assembly.
- Try rotating the developer case slowly to avoid spilling.

16) When done, press the Stop key to end the operation.
17) Execute STIR-Y/M/C/K in service mode (according to the color of developer you have replaced; about 2 min each). If you have replaced all four color developers, execute STIR-4.
18) Execute INIT-Y/M/C/K in service mode (according to the color of developer you have replaced; about 2 min). If you have replaced all four color developers, execute INIT-4.
19) Disconnect the connector [3], and free its harness from the edge saddle; then, remove the screw [4], and detach the black toner concentration sensor unit.

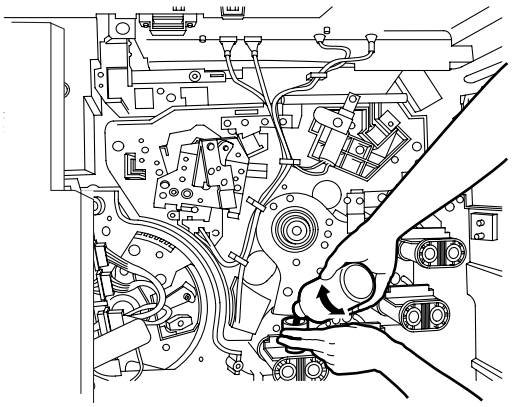

Figure 6-650

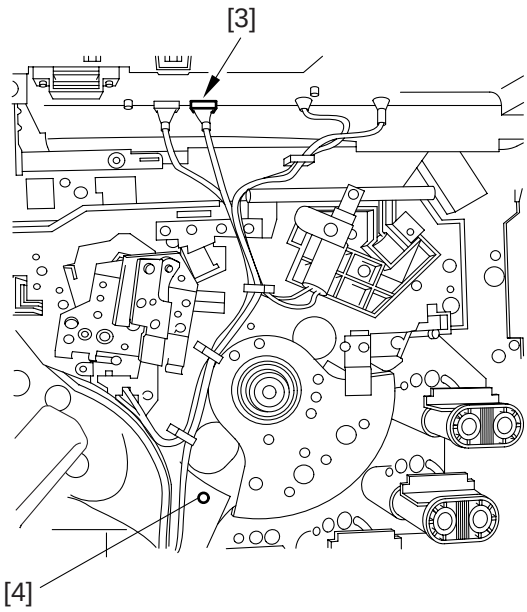

Figure 6-651

20) Dry wipe the sensor face [5] of the black toner concentration sensor unit. (Do not use alcohol.)
21) Mount the black toner concentration sensor unit, and connect the connector.
22) Execute ADJUST>DENS in service mode.
23) Record the data shown on the DENS screen on the service label. (The service label is attached to the back of the service data sheet cover inside the right front cover.)

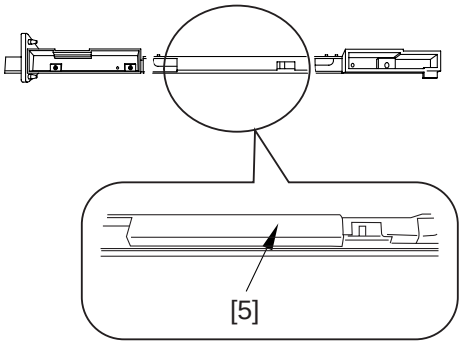

Figure 6-652

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E. Hoppe Assembly

1. Opening the Hopper

1) Open the front cover.
2) Remove the two screws [1], and detach the hopper stopper plate; then, open the hopper fully.

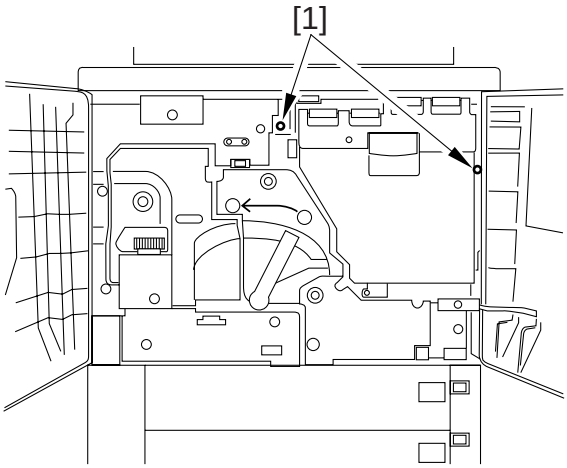

Figure 6-653

2. Removing the Hopper Unit

1) Open the hopper.
2) Disconnect the two connectors [1] from the bottom of the hopper unit, and remove the wire saddle.

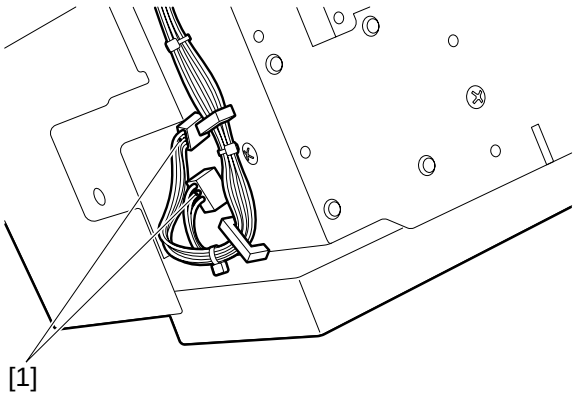

Figure 6-654

3) Hold the hopper unit as shown, and lift it.

Caution:

If you are replacing the developer at the same time as replacing the hopper unit with a new one, be sure to perform the work in II.F. “Supplying Starter” of Chapter 11.

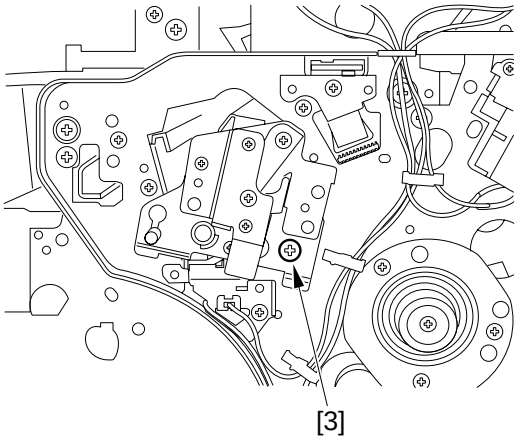

Figure 6-655

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3. Removing the Hopper Motor

1) Remove the hopper unit.
2) Remove the screw [1], and detach the toner receptacle [2].

Caution:
If the hopper motor does not rotate or fails to stop, a transistor on the DC driver PCB may be damaged. If such is the case, replace the DC driver PCB.

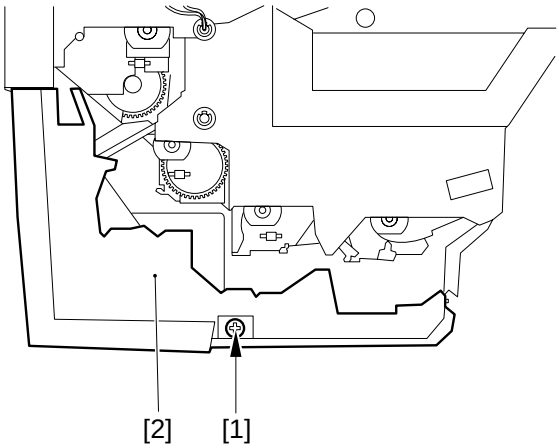

Figure 6-656

3) Remove the two screws [3], and disconnect the two connectors [4]; then, remove the connector mount.

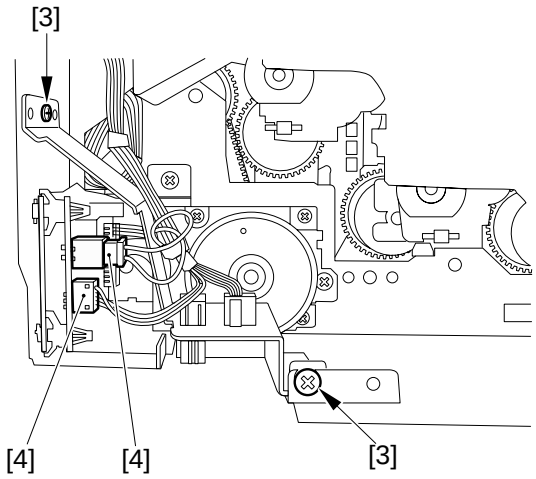

Figure 6-657

4) Remove the two screws [5], and remove the hopper motor.

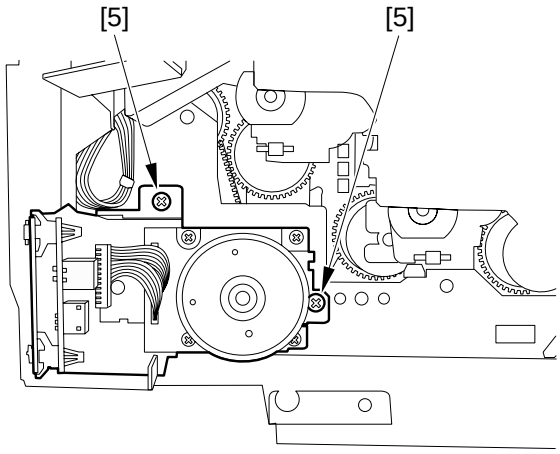

Figure 6-658

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4. Removing the Toner Supply Clutch

(The following uses the black hopper.)

1) Remove the hopper unit.
2) Remove the two screws [1], and detach the hopper cover [2].

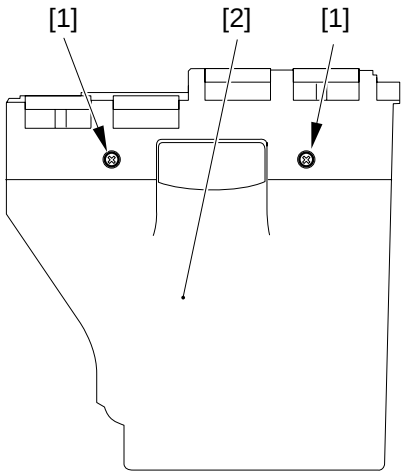

Figure 6-659

3) Remove the six screws [3], and detach the hopper upper cover [4].

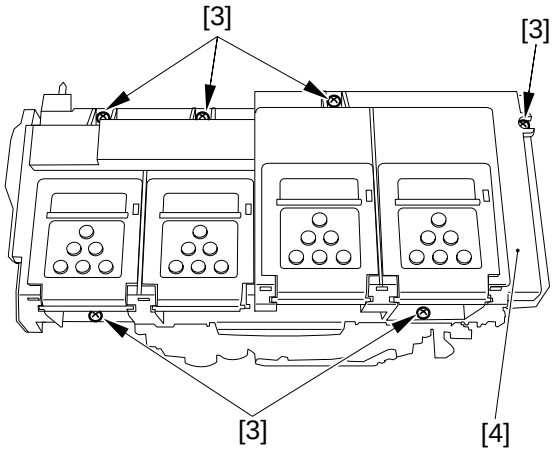

Figure 6-660

4) Remove the two screws [5], and detach the reinforcing plate [6].

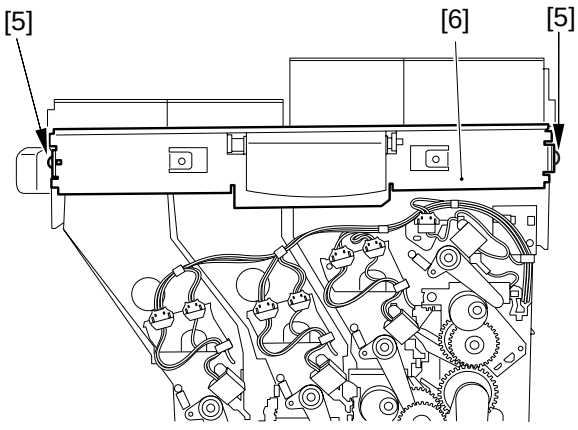

Figure 6-661

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5) Remove the screw [7], and disconnect the two connectors [8]; then, detach the black hopper.
In the case of the magenta hopper, remove the three screws [9]; then, detach the support plate [10] and the drive belt [11] in advance.

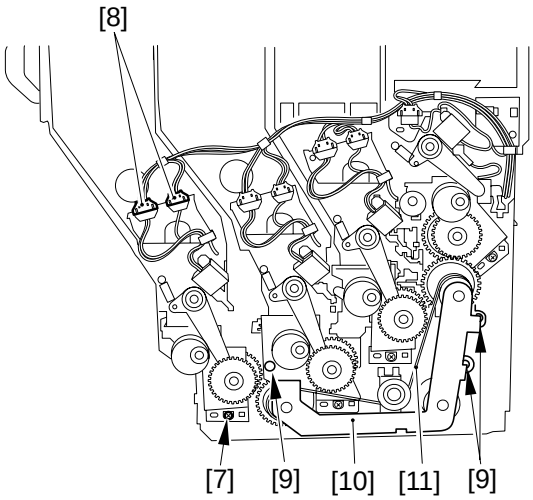
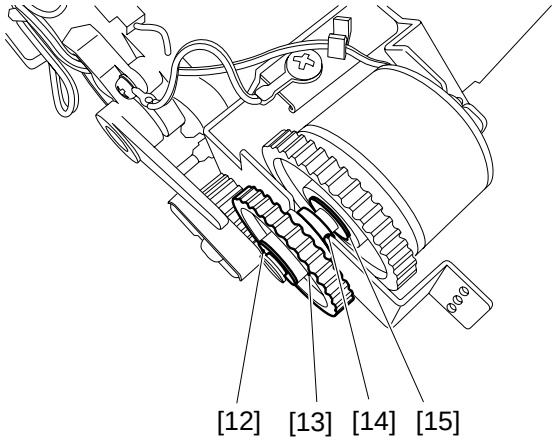


Figure 6-662

6) Remove the E-ring [12], gear 1 [13], bushing [14], E-ring [15], E-ring [16], and bushing [17], and disconnect the connector [18] of the hopper driver assembly; then, remove the clutch.



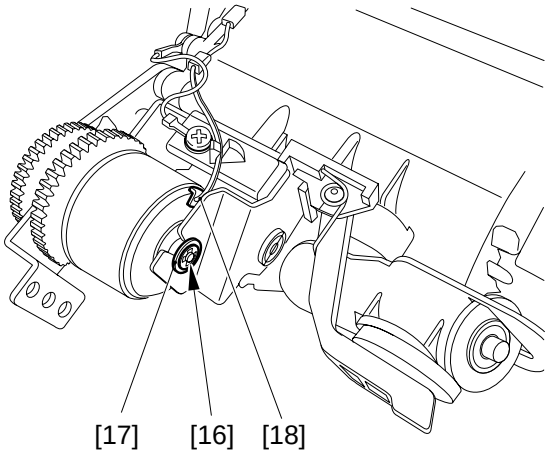


Figure 6-663

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F. Photosensitive Drum Cleaner Assembly

1. Removing the Photosensitive Drum Cleaner Unit

1) Open the front door (left, right), and remove the hopper unit stopper metal fixing.
2) Open the hopper unit fully.
3) Loosen the screw [1], and rotate the blade releasing lever [2] clockwise (unlocking direction) until it stops. Then, tighten the screw [1] to secure, and release the photosensitive drum cleaner blade from the photosensitive drum.

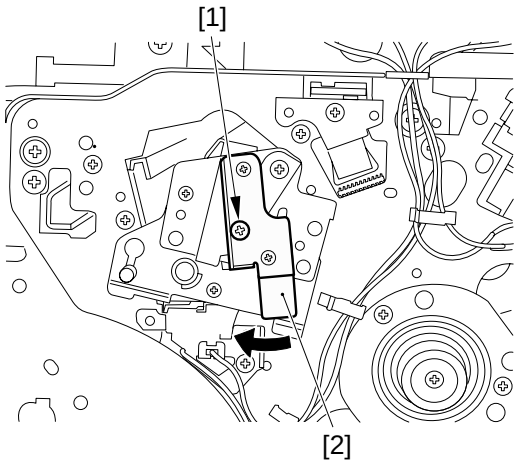

Figure 6-664

4) Remove the screw [3].

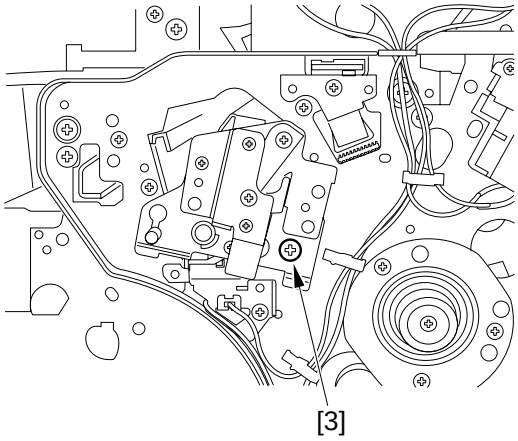

Figure 6-665

5) Slide out the photosensitive drum cleaner unit [4] slightly; in this condition, turn the unit counterclockwise, and slide it out.

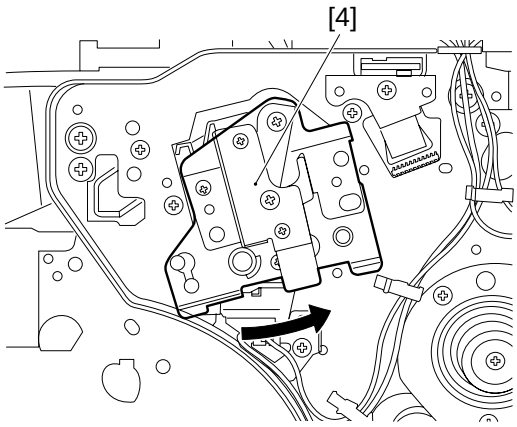

Figure 6-666

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Caution:

1. When inserting the photosensitive drum cleaner unit into the copier, be sure to put the cleaner unit in horizontal direction in relation to the copier's rails, and make sure that it will not slide off the rails.
2. When mounting the photosensitive drum cleaner unit, secure the cleaner unit with a screw [3]; then, turn the blade releasing lever [2] counterclockwise (locking direction), and check to make sure that the screw has been tightened fully.
3. Do not turn the blade releasing lever counterclockwise (locking direction) before putting back the cleaner unit.

2. Replacing the Photosensitive Drum Cleaner Blade

1) Remove the photosensitive drum cleaner unit.
2) Remove the screw [1], and detach the photosensitive drum cleaner unit upper cover [2].

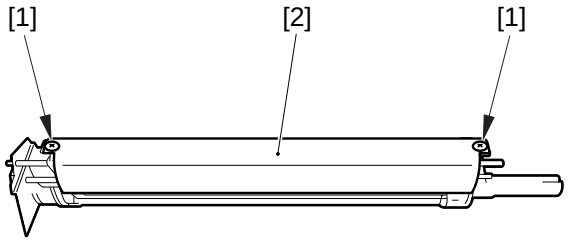

Figure 6-667

3) Remove the five screws [3], and detach the photosensitive drum cleaner blade.

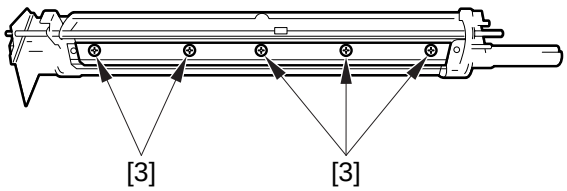

Figure 6-668

3. Replacing the Photosensitive Drum Cleaner Scoop-Up Sheet

1) Remove the photosensitive drum cleaner unit.
2) Remove the three screws [1], and detach the photosensitive drum cleaner scoop-up sheet [2].

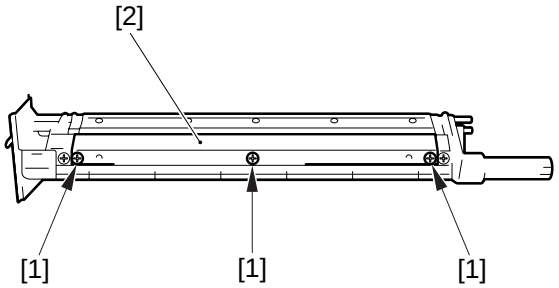

Figure 6-669

4. Removing the Photosensitive Drum Cleaner End Seal and Felt

1) Remove the photosensitive drum cleaner unit.
2) When removing the end seal, remove the two screws [1], and detach the photosensitive drum cleaner unit upper cover [2].

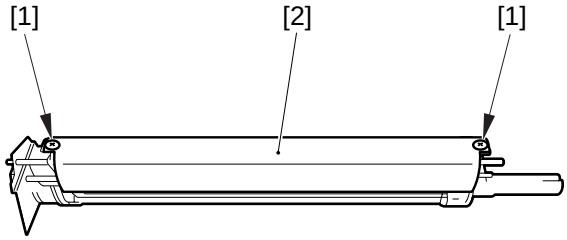

Figure 6-670

3) Remove the screw [3] (one each), and detach the end seal [4].

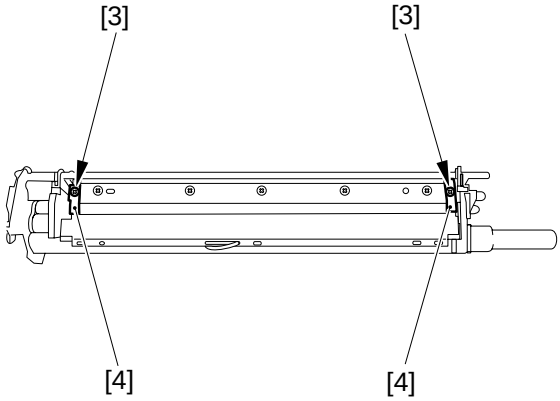

Figure 6-671

4) When removing the end felt, remove the scoop-up sheet.

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5) Remove the screw [5] (one each), and remove the end felt [6].

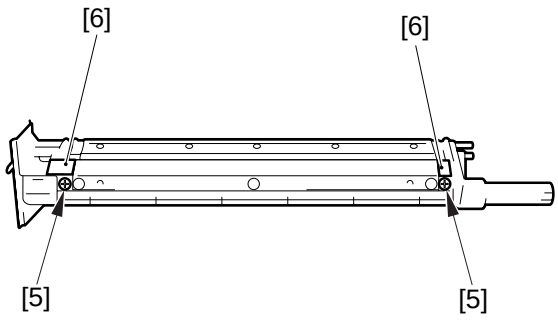

Figure 6-672

G. Pre-Cleaning Sensor Assembly No. 2 Scoop-Up Sheet Assembly

1. Replacing the No. 2 Scoop-Up Sheet Assembly

1) Remove the pre-cleaning sensor assembly.
2) Remove the screw [1], and detach the pre-cleaning sensor [2].
3) Mount the pre-cleaning sensor to the new No. 2 scoop-up sheet plate.
4) Mount the pre-cleaning sensor assembly to the copier.

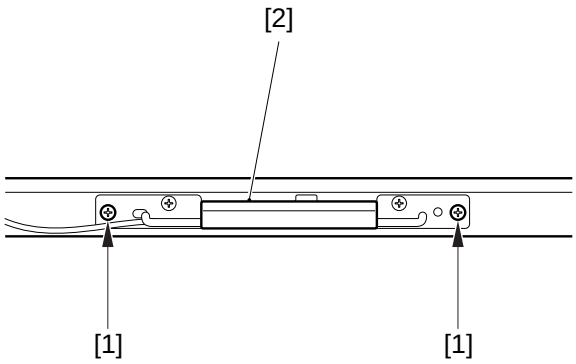

Figure 6-673

2. Points to Note When Handling the Pre-Cleaning Sensor Assembly

If you have removed or replaced the pre-cleaning sensor assembly, be sure to perform the following:

1) Dry wipe the window of the pre-cleaning sensor, and mount it.
2) Turn on the power switch so that the copier will be in standby state.
3) Select and execute FUNCTION>SENS-ADJ>CLN-OFST.
4) Record the value of ADJUST>SENS-ADJ>CLN-TH, CLN-TMP on the service label behind the right front door.

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H. Black Toner Concentration Sensor Assembly

1. Removing the Black Toner Concentration Sensor

1) Open the right front cover.
2) Open the hopper.
3) Disconnect the connector [1], and remove the screw [2]; then, detach the black toner concentration sensor unit [3].

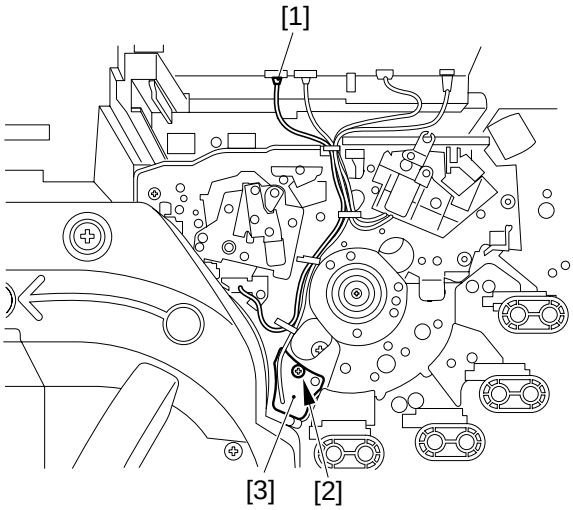

Figure 6-674

4) Remove the two screws [4], and detach the black toner concentration sensor; then, disconnect the connector.

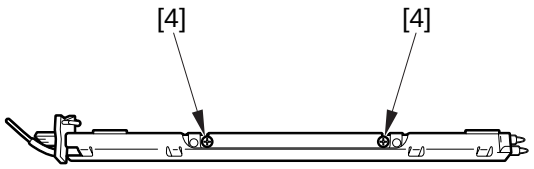

Figure 6-675

Caution:

1. Do not loosen any screws other than the screw [4] shown in the figure to avoid displacing the sensor.
2. If you have replaced the black toner concentration sensor, replace the developer for all four colors, and make settings once again.
3. If you have dry-wiped and mounted the black toner concentration sensor, select and execute FUNCTION> INSTALL>INIT-D in service mode.

2. Removing the No. 2 Blade

1) Remove the black toner concentration sensor unit from the copier.
2) Remove the two screws [1] (both front and rear), and detach the No. 1 blade [2].

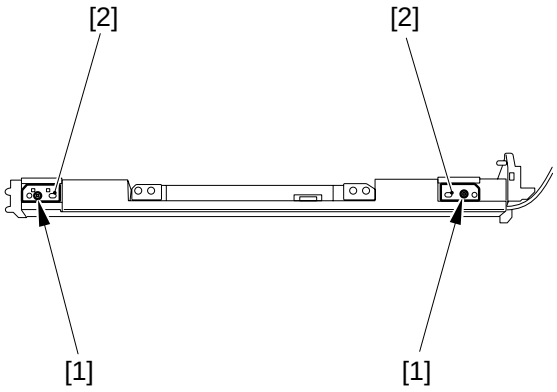

Figure 6-676

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Reference:

The No. 2 blade may be used for both its sides (side 1, side 2). Mount it so that the number (1, 2) on the blade is visible from the side of the photosensitive drum.

I. Cleaner Blade Reciprocating Motor

1. Removing the Reciprocating Motor Assembly

1) Remove the photosensitive drum cleaner unit.
2) Remove the rear cover.
3) Remove the flywheel.
4) Disconnect the connector [1], and remove the two screws [2]; then, detach the reciprocating motor assembly [3].

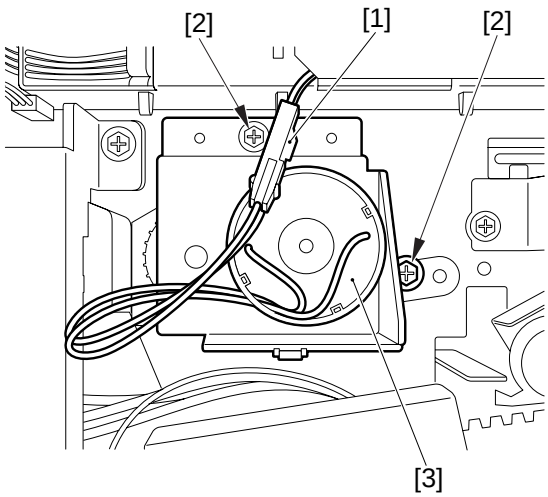

Figure 6-677

J. Waste Toner Feeding Assembly

1. Removing the Waste Toner Feedscrew Assembly

1) Remove the rear cover.
2) Remove the flywheel.
3) Remove the drum gear.
4) Remove the four screws [1], and disconnect the high-voltage connector [2].
5) Disconnect the high-voltage connectors of the primary/post-cleaning charging assembly from the high-voltage transformer.

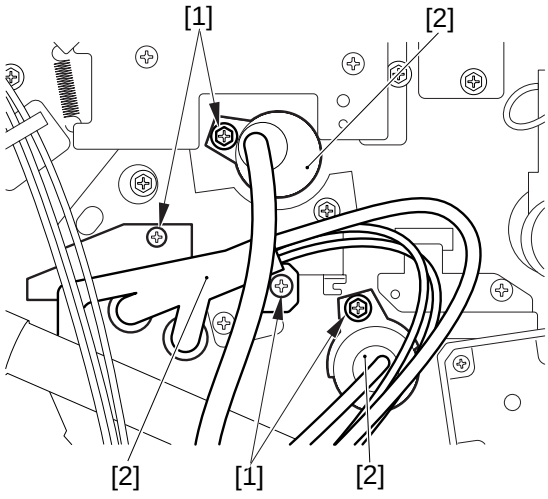

Figure 6-678

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6) Disconnect the three connectors [3].

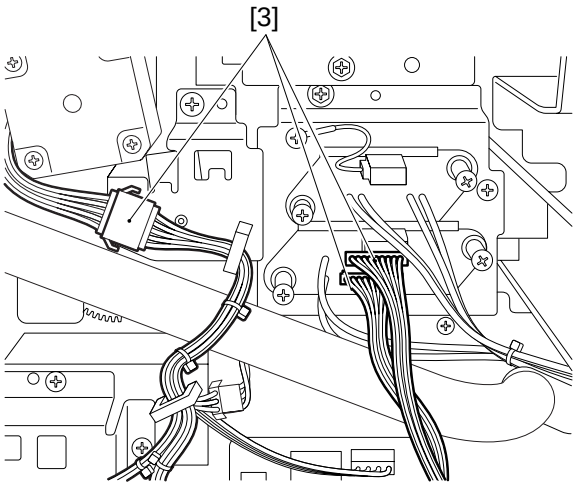

Figure 6-679

7) Remove the three screws [4], and remove the waste toner feed drive assembly [5]. At this time, take care not to drop gears or pins.

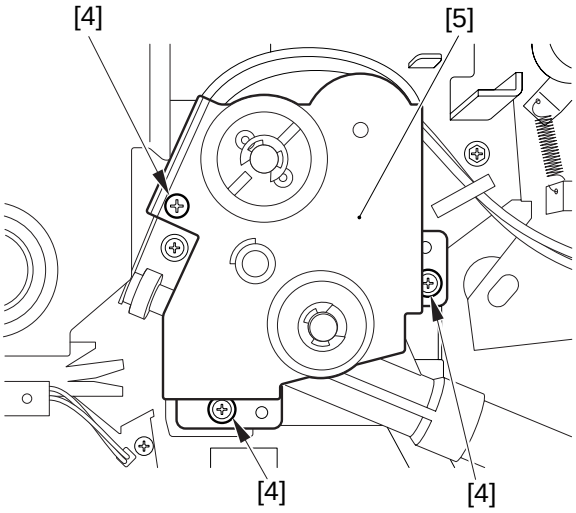

Figure 6-680

8) Remove the screw [6], and pull off the waste toner feedscrew assembly [7] to the front.

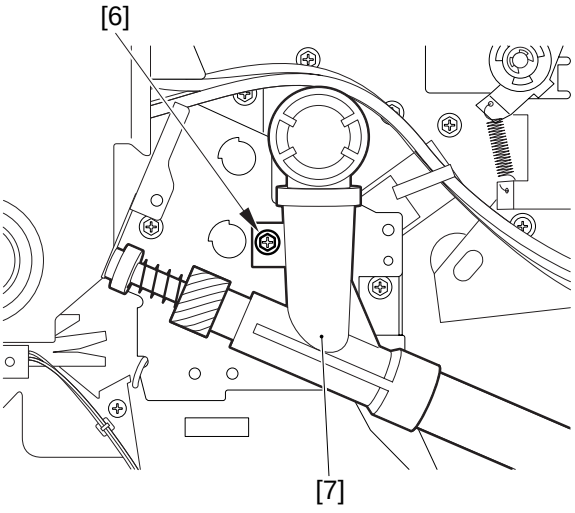

Figure 6-681

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K. Developing Drive Assembly

1. Removing the Developing Drive Assembly and the Developing Assembly Rail

1) Remove all developing assemblies.
2) Remove the rear cover, right upper cover, and right rear cover.
3) Remove the flywheel.
4) Disconnect the four connectors [1], and remove the two screws [2]; then, detach the potential measurement PCB.
5) Open the CPU PCB.
6) Remove the drive assembly reinforcing plate.

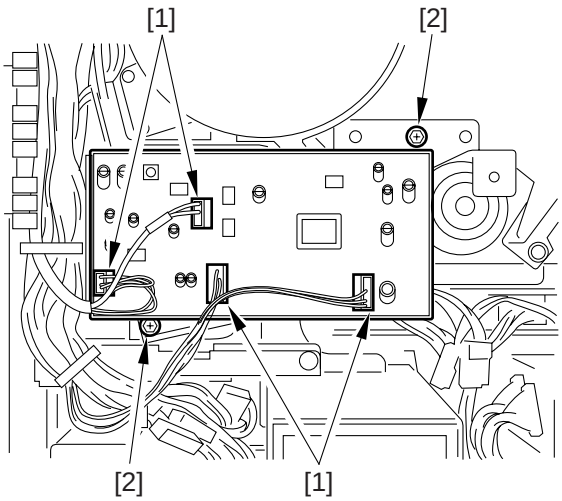

Figure 6-682

7) While lifting the tension plate [3] by hand, detach the drive belt [4].

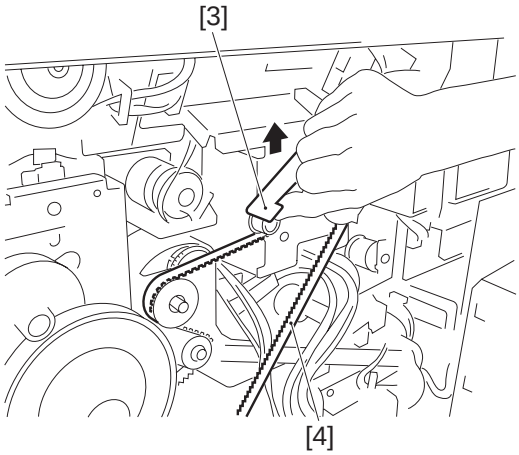

Figure 6-683

8) Remove the two screws [6].

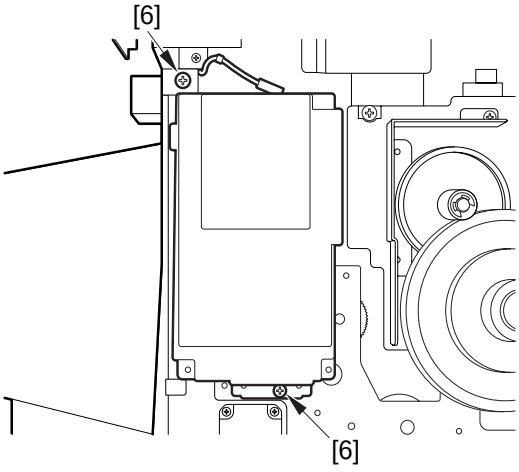

Figure 6-684

9) Disconnect the connector A [7]; then, move the lamp regulator unit slightly to the front, and disconnect the connector B [8] and the connector C [9], and detach the lamp regulator PCB.

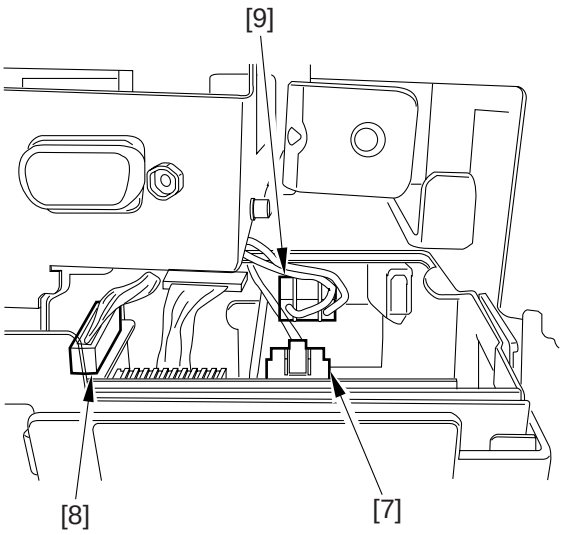

Figure 6-685

10) Disconnect the three connectors [10], and free the harness [11] to the developing drive assembly to the cable lamp.

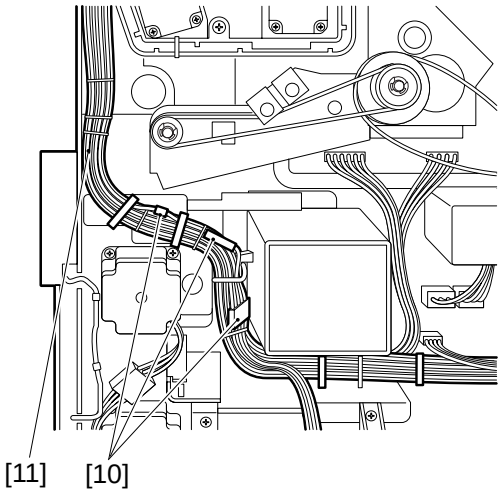

Figure 6-686

11) Remove the two screws [12], and detach the cable guide [13].
12) Free the harness [15] from the clamp [14].

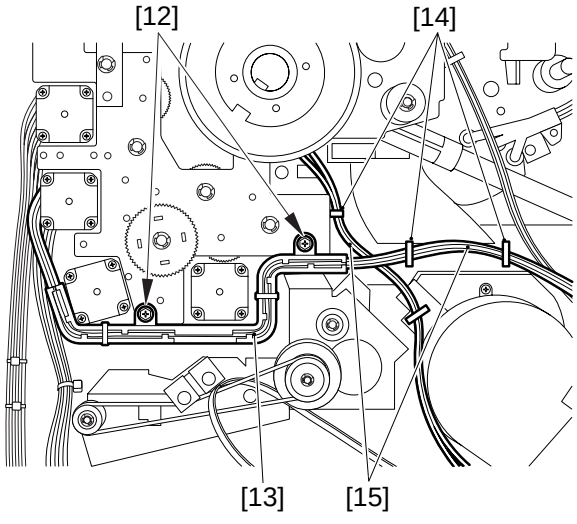

Figure 6-687

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13) Remove the four screws [16], and detach the developing drive assembly [17].

Caution:
Take care not to hit the gear [18] on the drum shaft.

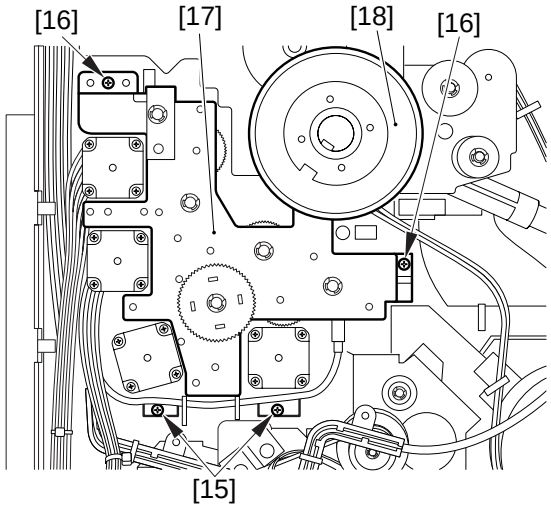

Figure 6-688

14) Disconnect the three connectors [19] found on the top of the multifeeder assembly.
15) Pull off the three pins [20] at the top, and shift the partition sheet [21] in the direction of the arrow.
16) Remove the transfer assembly frame from the copier.

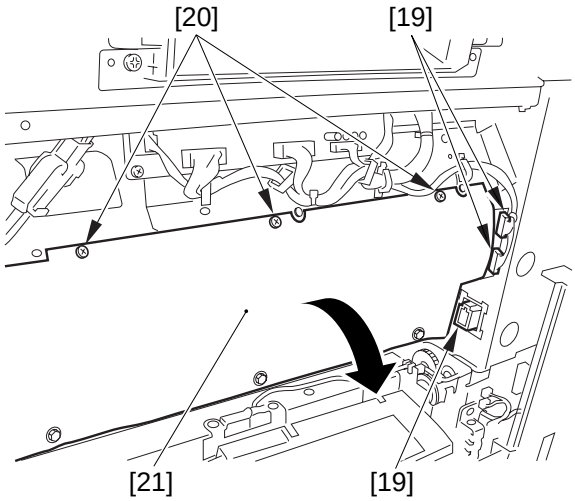

Figure 6-689

17) Remove the two screws [22], and remove the toner receptacle [23].
18) Remove the screw [24], and detach the face cover [25].
19) Remove the two screws [26], detach the two positioning pins [27].

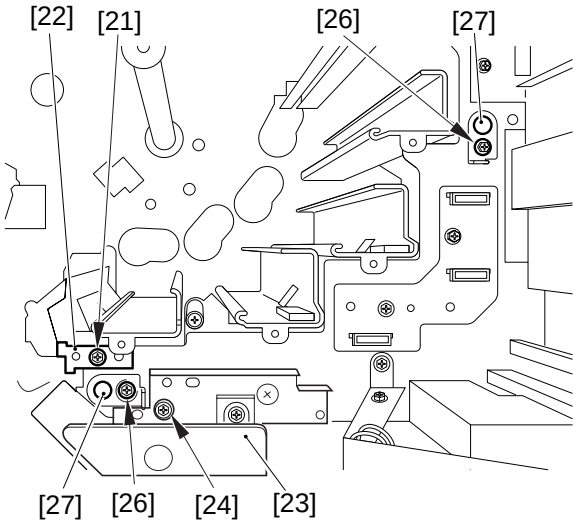

Figure 6-690

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20) Pull the developing assembly rail mount [28] slightly to the front, and detach it by rotating it clockwise.

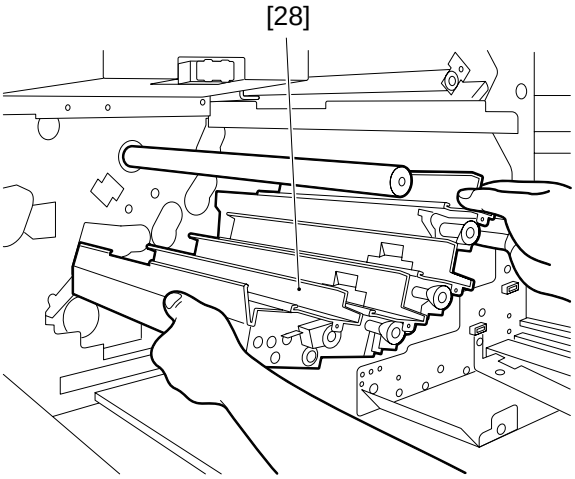

Figure 6-691

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CHAPTER 7

PICK-UP / FEEDING SYSTEM

This chapter explains the operations and functions of the copier's pickup/delivery system and the relationship between electrical and mechanical systems, and provides an outline of the timing at which various associated parts are driven.

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I. OPERATIONS

A. Outline

The copier's pickup system is equipped with the sources of copy paper shown in Table 7-101, and it uses a center reference method, in which copy paper is moved in the center of the pickup/ feeding path.

Model	Construction
CLC1120	Multifeeder + Cassette 1 + Cassette 2
CLC1130	Multifeeder + Cassette 1 + Cassette 2 + Cassette 3
CLC1150	Multifeeder1 + Duplexing unit1 + Cassette 1 + Cassette 2

Table 7-101 Sources of Copy Paper

Copy paper fed from the multifeeder is moved to the registration roller. When the registration roller starts to rotate, the attraction charging assembly turns on to keep the copy paper on the transfer drum.

The toner image on the photosensitive drum is transferred to the copy paper in this condition; i.e., copy paper is rotated a maximum of four times while it is on the transfer drum.

In the case of small-size copy paper (182 to 216 mm long in feeding direction), two sheets are kept on the transfer sheet to speed up copying speed.

When transfer ends, the copy paper is moved through the separation, feeding, and fixing assemblies and then to the copy tray.

Figure 7-101 is a diagram of the copier's paper path.

The CLC1120's pickup system is identical to that of the CLC1130, except that it does not have the cassette 3. Refer to the construction of the CLC1130.

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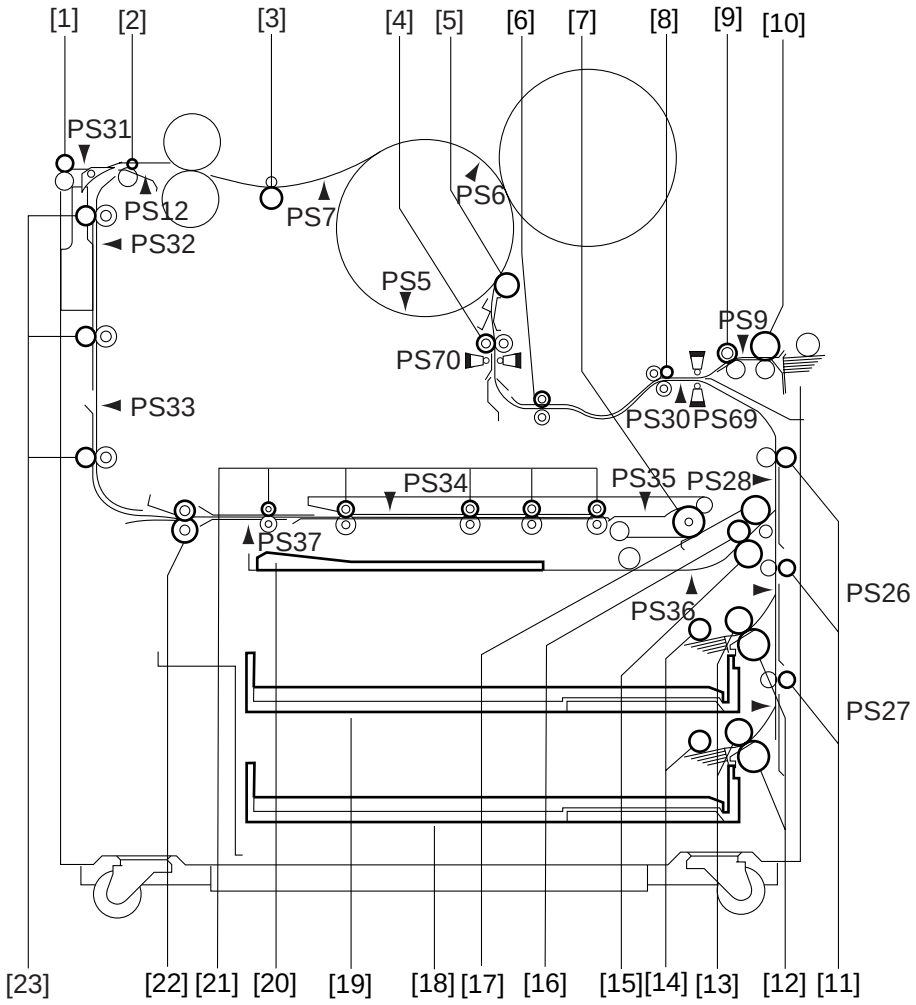
B. Arrangement of Rollers and Sensors

1. CLC1150



[1] External delivery roller
[2] Internal delivery roller
[3] Postcard feed roller
[4] Registration roller
[5] Attraction roller
[6] Pre-registration roller 1
[7] Duplexing reversing roller
[8] Pre-registration roller 2
[9] Manual feed pull-off roller
[10] Multifeeder pickup roller
[11] Pickup vertical path roller 1, 2, 3
[12] Cassette 1/2 separation roller
[13] Cassette 1/2 feed roller
[14] Cassette 1/2 pickup roller
[15] Duplexing separation roller
[16] Duplexing feed roller
[17] Re-pickup feed roller
[18] Cassette 2
[19] Cassette 1
[20] Duplexing tray
[21] Duplexing feed rollers 1, 2, 3, 4, 5
[22] Duplexing inlet roller
[23] Delivery vertical path 1/2/3 roller

Figure 7-101a

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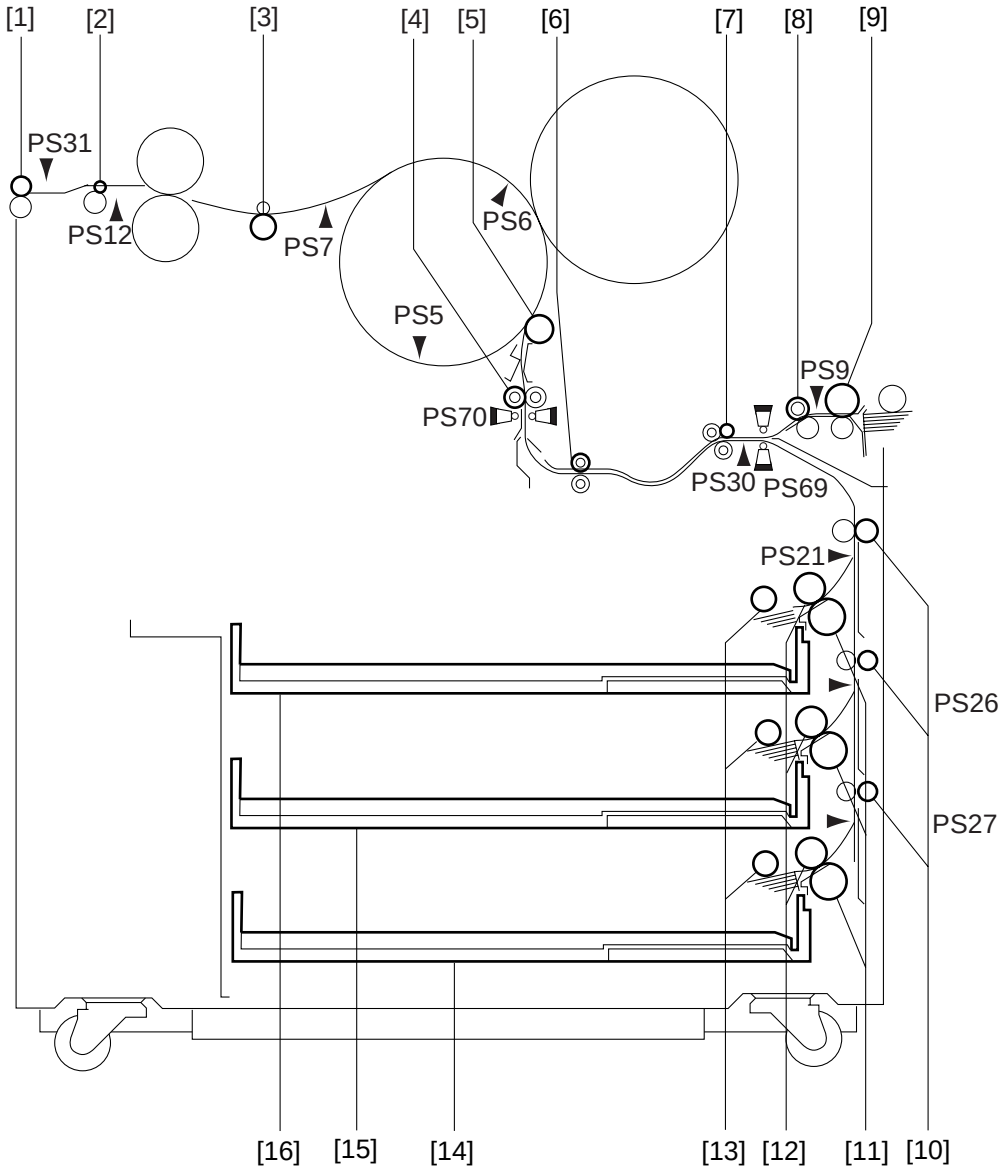
2. CLC1130



[1] External delivery roller
[2] Internal delivery roller
[3] Postcard feed roller (100V model only)
[4] Registration roller
[5] Attraction roller
[6] Pre-registration roller 1
[7] Pre-registration roller 2
[8] Manual feed pull-off roller
[9] Multifeeder pickup roller
[10] Pickup vertical path 1/2/3 roller
[11] Cassette 1/2/3 separation roller
[12] Cassette 1/2/3 feed roller
[13] Cassette 1/2/3 pickup roller
[14] Cassette 3
[15] Cassette 2
[16] Cassette 1

Figure 7-101b

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Notation	Name	Remarks
PS5	Pre-transfer paper sensor	
PS6	Post-transfer paper sensor	
PS7	Separation sensor	
PS9	Multifeeder pickup sensor	
PS12	Internal delivery sensor	
PS21	Pickup vertical path 1 sensor	CLC1120/1130 only
PS26	Pickup vertical path 2 sensor	
PS27	Pickup vertical path 3 sensor	CLC1130/1150 only
PS28	Re-pickup vertical path sensor	CLC1150 only
PS30	Pre-registration sensor	
PS31	External delivery sensor	
PS32	Delivery vertical path 1 sensor	CLC1150 only
PS33	Delivery vertical path 2 sensor	CLC1150 only
PS34	Duplexing path sensor	CLC1150 only
PS35	Duplexing reversal paper sensor	CLC1150 only
PS36	Duplexing tray paper sensor	CLC1150 only
PS37	Duplexing inlet paper sensor	CLC1150 only
PS69	Transparency sensor	
PS70	Registration sensor	
PS71	Pre-cleaning paper sensor	

Table 7-102

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II. PICKUP ASSEMBLY

A. Pickup from the Cassette

1. Outline

The copier's cassette pickup assembly consists of the pickup roller, feed roller, and separation roller, and it is controlled as shown in Figures 7-201 and -202.

📖 Volume 4>Chapter 7>II.A "Cassette Pickup Assembly"

The CLC1120' pickup system is identical to that of the CLC1130 except that it does not have the cassette 3. See the construction of the CLC1130.

Item	Description
Feed reference	Center
Capacity	550 sheets (cassettes 1, 2, 3; approximate; of 81.4 g/m^2 paper)
Paper size setting (Table 7-202)	Universal type: by the user Fixed-size type: by the service person
Related mechanical adjustment	Cassette horizontal registration

Table 7-201 Functions

Model \ Cassette	Cassette 1	Cassette 2	Cassette 3
CLC1120	Fixed-size type	Universal type	
CLC1130	Fixed-size type	Fixed-size type	Universal type
CLC1150	Fixed-size type	Universal type	

Note:
The size of a fixed-size type cassette is changed by the service person, while that of a universal type may be changed by the user.

Table 7-202 Construction of the Cassette

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Table 7-203 shows the pickup motor, pickup clutch, and pickup roller solenoid used by each cassette of the copier.

Name \ Cassette	Cassette 1	Cassette 2	Cassette 3
Cassette pickup motor	PM10	PM11	PM12
Cassette pickup clutch	CL11	CL12	CL13
Pickup roller solenoid	SL7	SL8	SL9

Figure 7-203a Pickup Assembly of the CLC1130

Name \ Cassette	Cassette 1	Cassette 2
Cassette pickup motor	DPM11	DPM12
Cassette pickup clutch	DCL12	DCL13
Pickup roller solenoid	DSL8	DSL9

Figure 7-203b Pickup Assembly of the CLC1150

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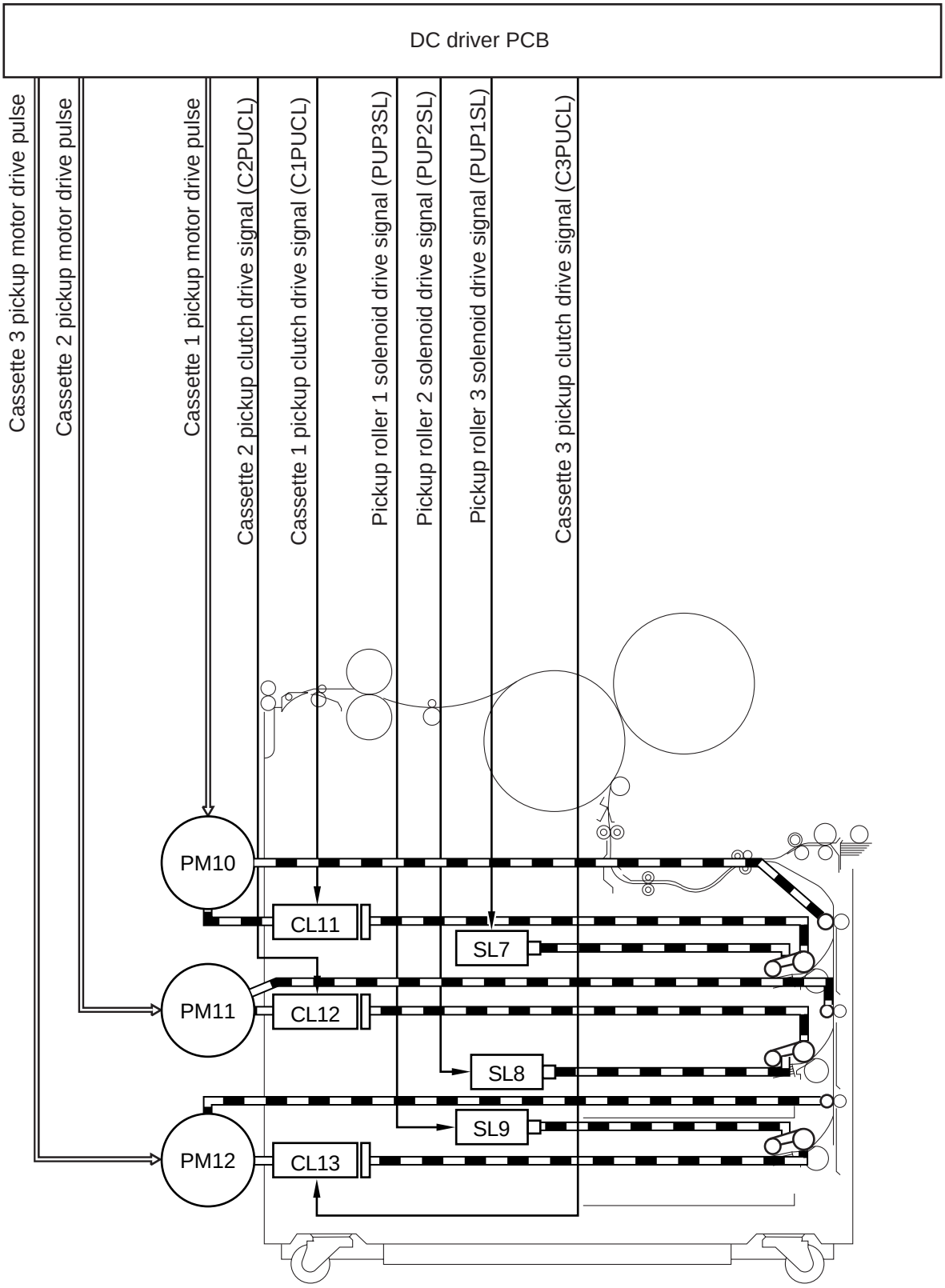

Figure 7-201 Pickup Assembly of the CLC1130

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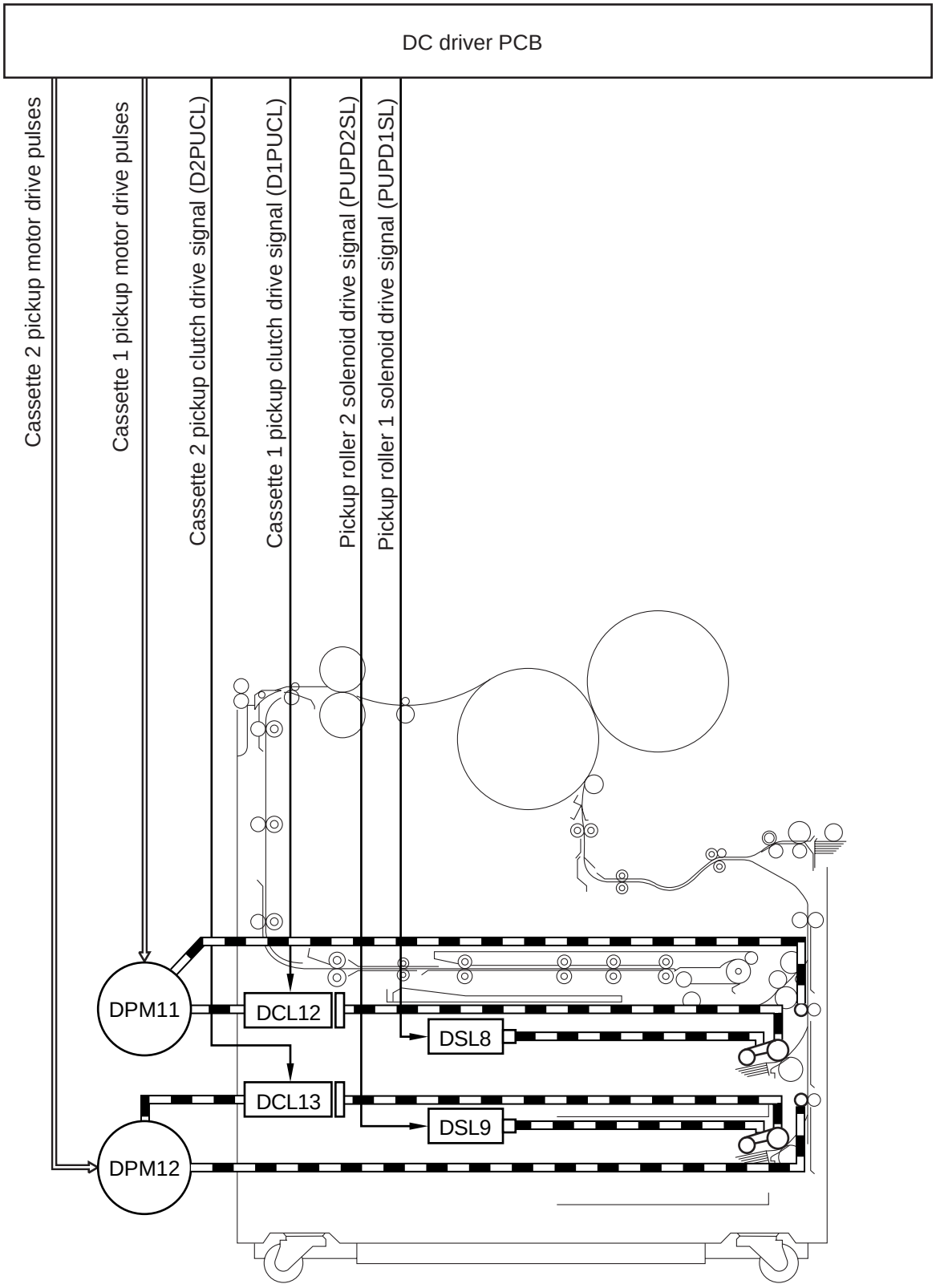

Figure 7-202 Pickup Assembly of the CLC1150

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B. Lifter Movement

1. Outline

When the cassette is slid into the copier, the pickup roller lowers, and the light-blocking plate leaves the lifter position sensor.

This condition turns on the lifter motor and, as a result, the lifter moves up. The lifter motor stops when the lifter position sensor detects the top surface of the stack of copy paper on the lifter.

If the lifter position sensor does not turn on within a specific period of time after the lifter motor has turned on, the copier will indicate 'E040' on its control panel.

🕮 Volume 4>Chapter 7>II.A>4. "Movement of the Lifter"

Table 7-204 shows the lifter motor, lifter position sensor, and paper sensor used for each cassette.

The CLC1120's pickup system is identical to that of the CLC1130 except that it does not have the cassette 3. See the construction of the CLC1130.

Cassette / Name	Cassette 1	Cassette 2	Cassette 3
Lifter motor	M11	M12	M13
Lifter positions sensor	PS19	PS22	PS23
Paper sensor	PS20	PS24	PS25
Cassette open/closed sensor	PS46	PS47	PS48
Paper level detecting VR	VR2	VR4	VR6

Figure 7-204a CLC1130

Cassette / Name	Cassette 1	Cassette 2
Lifter motor	DM12	DM13
Lifter positions sensor	DPS22	DPS23
Paper sensor	DPS24	DPS25
Cassette open/closed sensor	DPS47	DPS48
Paper level detecting VR	DVR4	DVR6

Figure 7-204b CLC1150

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2. Detecting the Presence/Absence of Paper

The presence/absence of copy paper inside the cassette is detected by the cassette paper sensor.

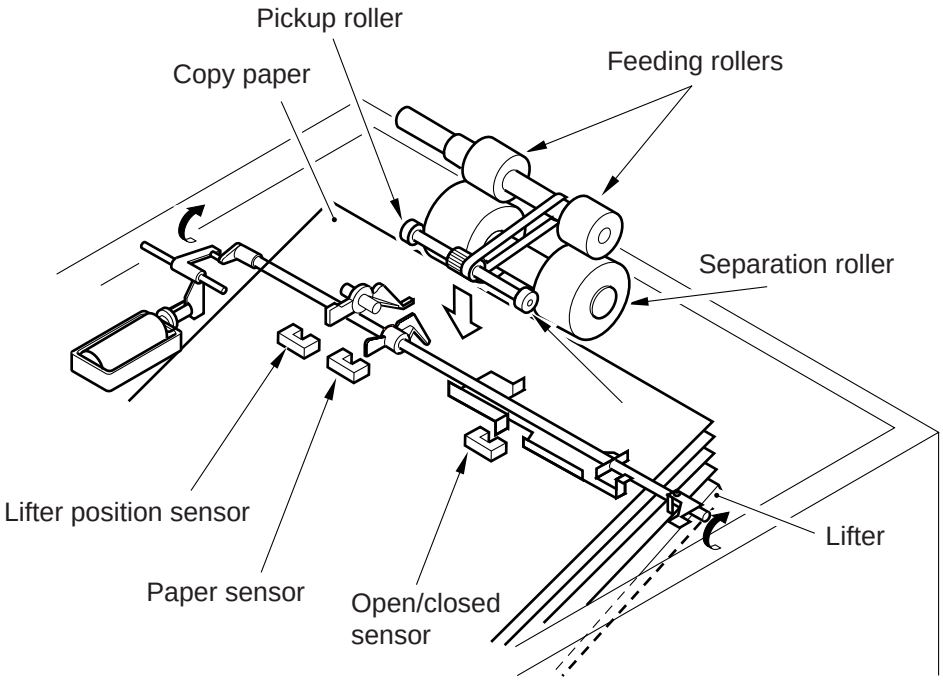

Figure 7-203

3. Detecting the Level of Paper

The copier uses the resistance occurring in the variable resistor operating in conjunction with the movement of the lifter drive shaft to detect the level of copy paper inside the cassette. It indicates the result in four levels (including absence of paper) on its control panel.

Paper level	Indication on control panel
100% to about 50%	
About 50% to about 10%	
About 10% or less	
No paper	

Figure 7-204

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If you have replaced the paper level detecting VR or initialized the RAM, you must enter the factory values recorded on the service label in service mode:

Related Service Mode

ADJUST>CST-ADJ>C1-LVOL	Use it to enter the slice level of paper volume for cassette 1 (for 50 sheets)
ADJUST>CST-ADJ>C1-HVOL	Use it to enter the slice level of paper volume for cassette 1 (for 275 sheets)
ADJUST>CST-ADJ>C2-LVOL	Use it to enter the slice level of paper volume for cassette 2 (for 50 sheets)
ADJUST>CST-ADJ>C2-HVOL	Use it to enter the slice level of paper volume for cassette 2 (for 275 sheets)
ADJUST>CST-ADJ>C3-LVOL	Use it to enter the slice level of paper volume for cassette 3 (for 50 sheets)
ADJUST>CST-ADJ>C3-HVOL	Use it to enter the slice level of paper volume for cassette 3 (for 275 sheets)

C. Detecting the Paper Size Inside the Cassette

1. Fixed-Size Type Cassette

The fixed-size cassette of each model (Table 7-202) is not equipped with a function to detect paper size, and its size is switched by the service person as follows:

1) Change the paper guide plate inside the cassette to suit the paper size specified by the user.
2) Enter the new paper size in service mode:

Related Service Mode

OPTION>CST>P-SZ-C1	Use it to set the paper size for cassette 1.
OPTION>CST>P-SZ-C1	Use it to set the paper size for cassette 2.

2. Universal Type Cassette

a. To detect the length of paper, the copier uses a paper length sensor consisting of two photointerrupers.
b. To detect the width of paper, the copier uses a paper width detecting volume.

🕮 Volume 4>Chapter 7>II.A>3.b. “Detecting the Size of Paper”

Cassette / Paper size detection	Cassette 2	Cassette 3
Paper length sensor	PSU2/DSU3	PSU3
Paper width detecting volume	VR3/DVR5	VR5

Table 7-205

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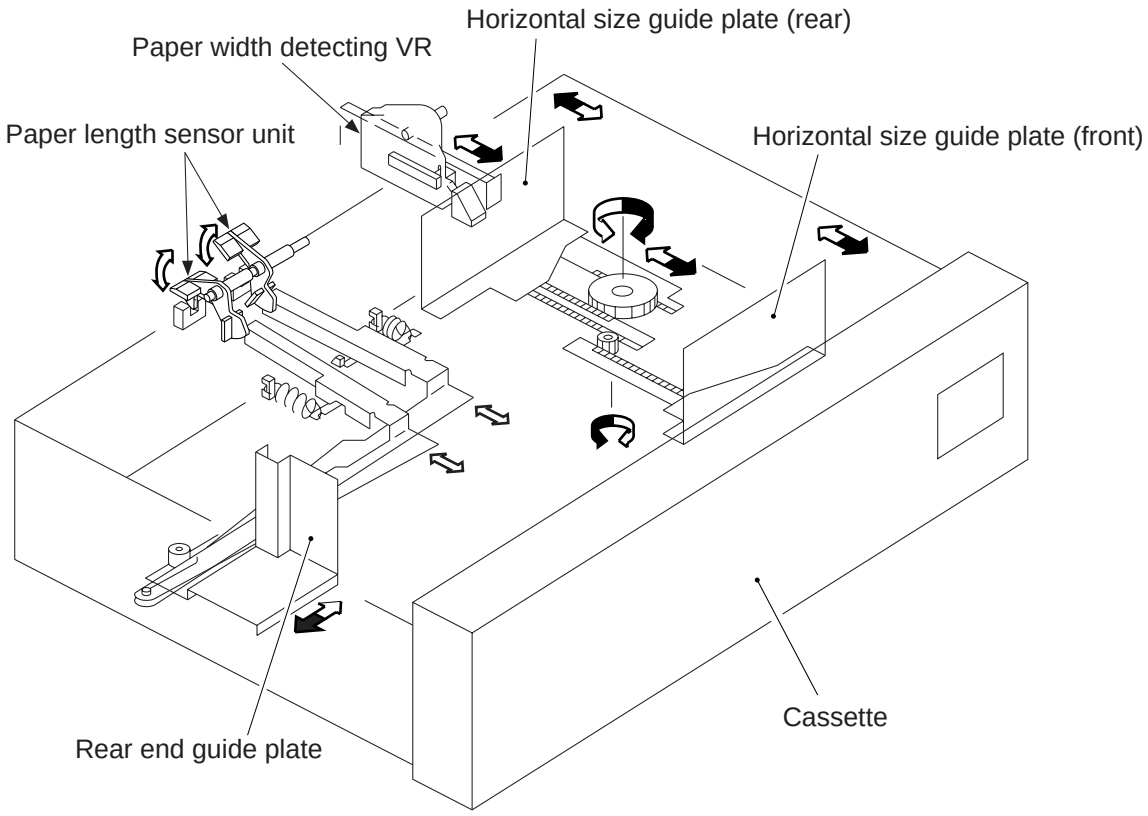

Figure 7-205

3. Paper Sizes and Cassettes

Table 7-206 shows the paper sizes that may be used with the copier. All cassettes may be used for transparencies, but label sheets (special) and thick paper (106 to 209 g/m^2) may be used only with the multifeeder.

Paper	Notation	Size (vertical x horizontal; mm)
A3	A3	(297±1) x (420±1)
A4R	A4R	(210±1) x (297±1)
A4	A4	(297±1) x (210±1)
B4	B4	(257±1) x (364±1)
B5R	B5R	(182±1) x (257±1)
B5	B5	(257±1) x (182±1)
11 x 17	11 x 17	(297±1) x (432±1)
LETTER-R	LTRR	(216±1) x (279±1)
LETTER	LTR	(297±1) x (216±1)
LEGAL	LGL	(216±1) x (356±1)

Table 7-206

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4. Paper Width Basic Value

If you have replaced the paper width detecting volume or initialized the RAM, you need to enter the paper width basic values for STMTR and A4R in service mode:

Related Service Mode

ADJUST>CST-ADJ>C2-STMTR	Use it to change the paper width basic value for STMTR for cassette 2.
ADJUST>CST-ADJ>C2-A4R	Use it to change the paper width basic value for A4R for cassette 2.
ADJUST>CST-ADJ>C3-STMTR	Use it to change the paper width basic value for STMTR for cassette 3.
ADJUST>CST-ADJ>C3-A4R	Use it to change the paper width basic value for A4R for cassette 3.

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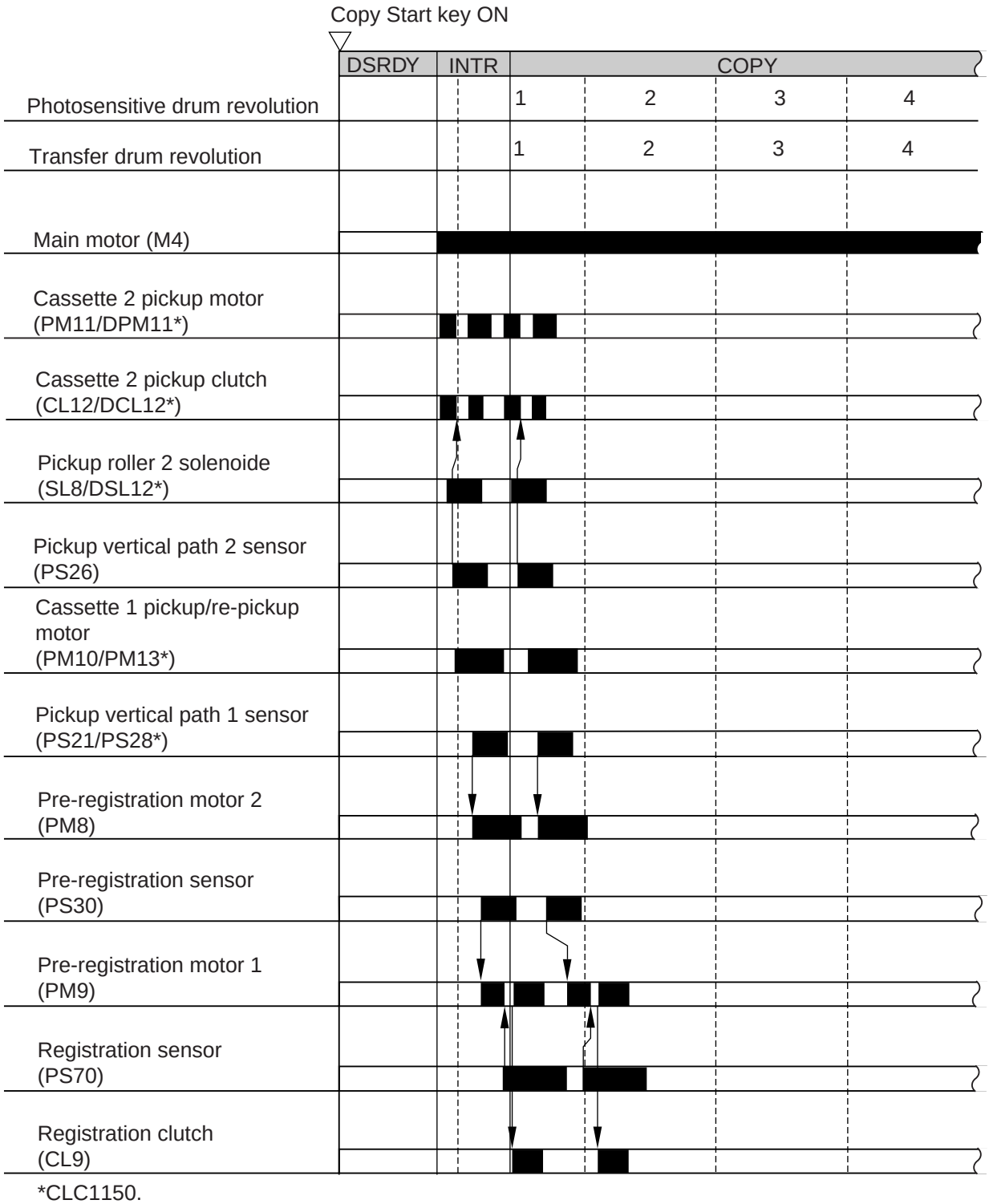
5. Sequence of Operations (pickup from the cassette)

Cassette 2, A4, Full-Color, Direct



*CLC1150.

Figure 7-206

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D. Pickup from the Multifeeder

1. Operations

The multifeeder pickup assembly consists of the parts shown in Table 7-207.

For multifeeder, the copier recognizes that paper is thick paper when the user selects 'thick paper' on its control panel.

Volume 4>Chapter 7>II.B>2. "Multifeeder" (b.2)

Item	Description
Pickup method	Picks up paper from the stack continuously. (pickup roller + feed roller + separation roller)
Tray capacity	250 sheets (of 81.4 g/m^2 paper)
Main motor (M4)	Drivers the multifeeder pickup system.
Multifeeder pickup clutch (CL16)	Turns on/off the multifeeder pickup roller.
Multifeeder pickup solenoid (SL14)	Releases the multifeeder pickup roller.
Multifeeder feed clutch (CL10)	Turns on/off the multifeeder feed roller 2.
Multifeeder paper sensor (PS15)	Detects the presence/absence of paper.
Multifeeder pickup sensor (PS9)	Detects a jam in the multifeeder pickup assembly.

Table 7-207

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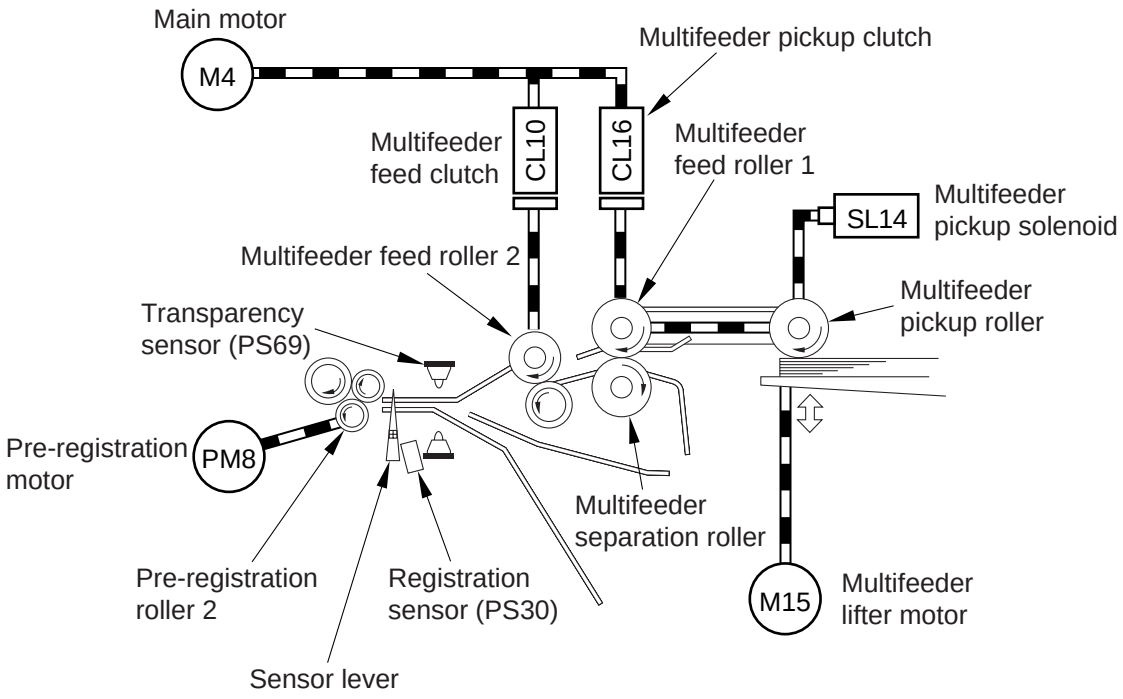

Figure 7-207

2. Detecting the Size of Paper

Volume 4>Chapter 7>II.B>3. “Detecting the Size of Paper” (b)

Item	Description
Paper length	No detecting mechanism
Paper width	Variable resistor (VR) in the slide guide assembly

Table 7-208

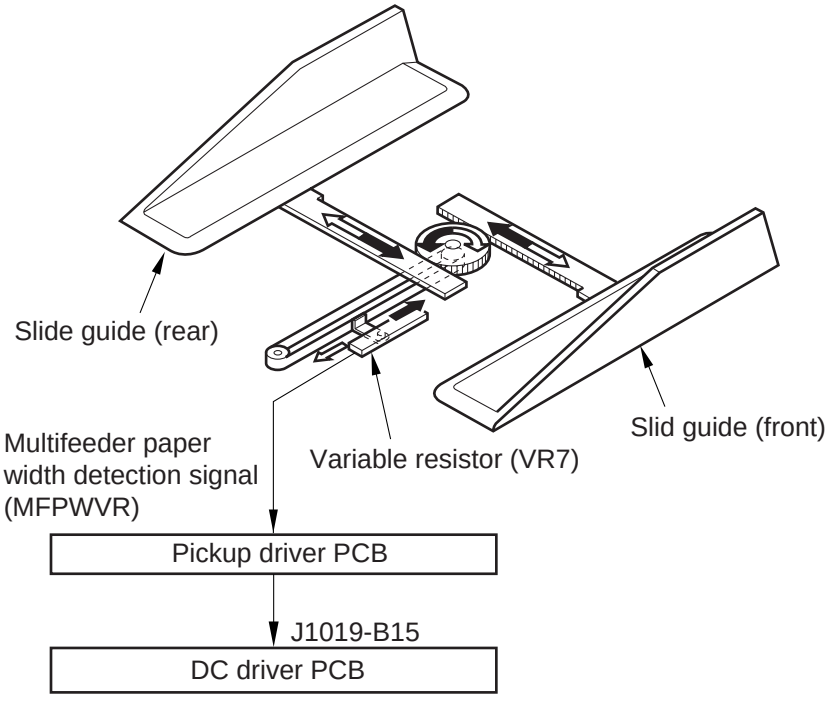

Figure 7-208

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3. Movement of the Lifter

Volume 4>Chapter 7>II.B>4. “Movement of the Lifter”

The multifeeder lifter is constructed as shown in Figure 7-209.

The multifeeder tray open/closed sensor monitors the state (open/closed) of the multifeeder tray so as not to drive the lifter motor while the multifeeder tray is closed.

Related Error Code
E040
The lifter sensor does not turn on within a specific period of time after the lifter motor has turned on.

Item	Description
Multifeeder lifter motor (M15)	Drives the lifter.
Multifeeder lifter sensor (PS17)	Detects the position of the lifter (up).
Multifeeder lifter sensor (PS18)	Detects the position of the lifter (down)
Multifeeder tray open/closed sensor (PS62)	Detects the state (open/closed) of the lifter tray.

Table 7-209

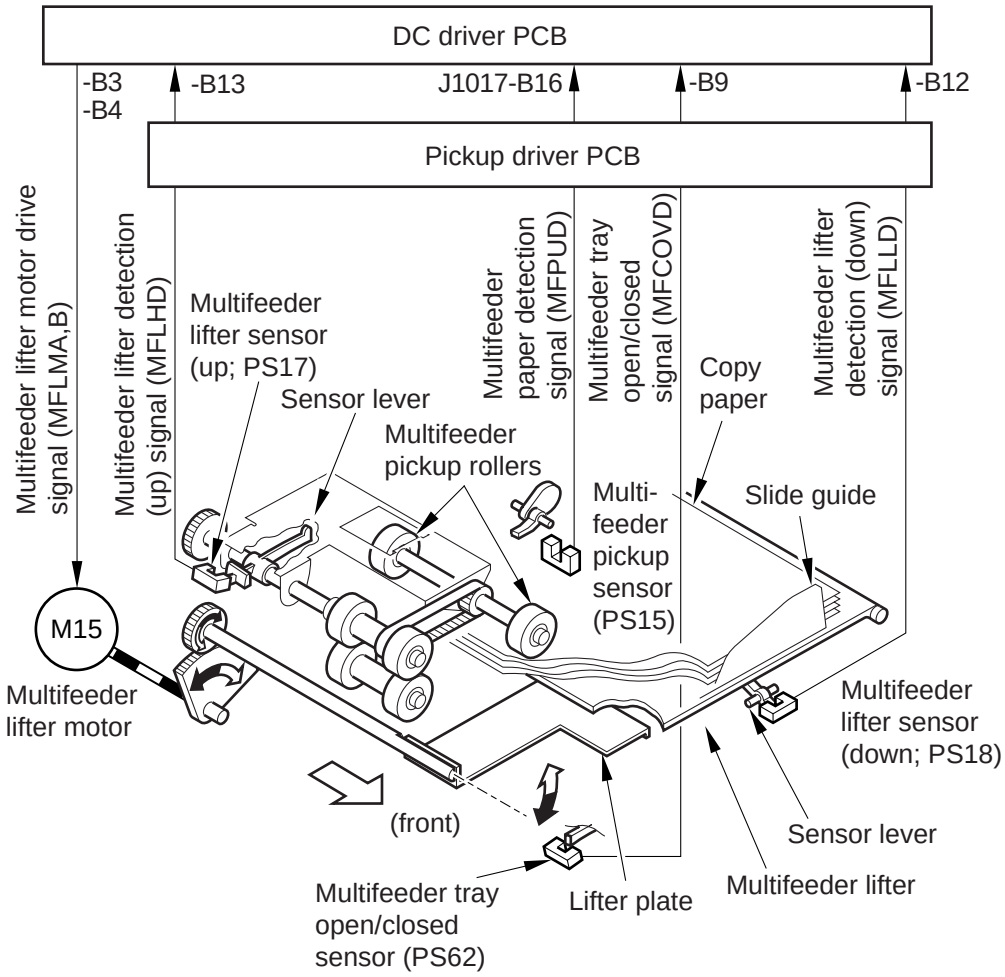

Figure 7-209

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4. Sequence of Operations

Multifeeder, A4, Full-Color, Direct

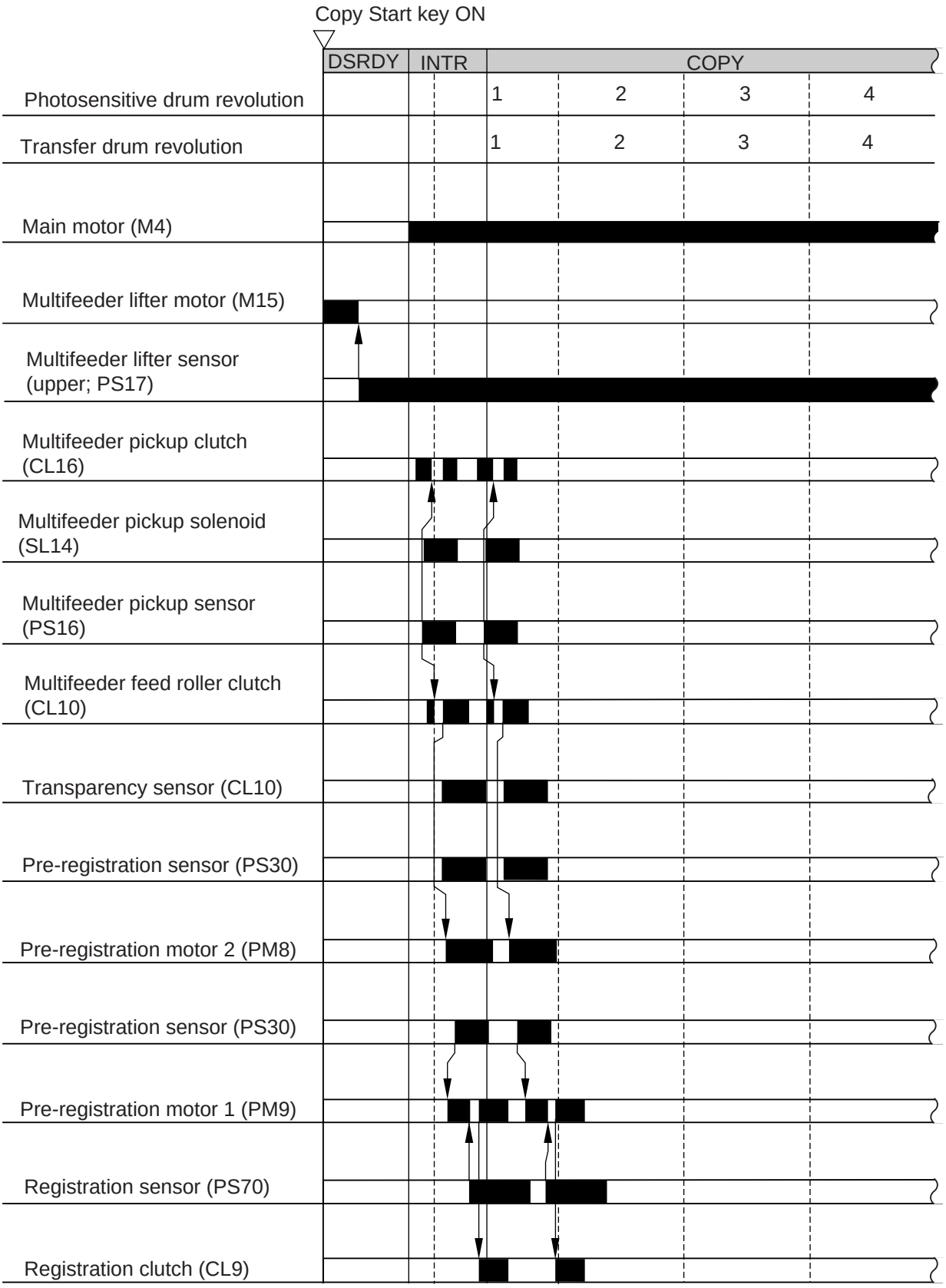

Figure 7-210

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E. Picking Up Transparencies

Transparencies may be fed using the multifeeder or a cassette (by selecting a cassette in user mode).

When copying on a transparency (full-color only), the copier slows down the fixing roller to ensure proper fixing.

The copier is capable of recognizing transparencies of A4, A4R, LTR, or LTR-R without input from the control panel. (The copier, however, will not feed a transparency of another size without input from the control panel, causing a jam.)

Volume 4>Chapter 7>II.B>6. “Detecting Transparencies” (b)

Item	Description
Transparency detection	Based on the combinations of the states of a transmission-type transparency sensor and the pre-registration sensor (PS30).

Table7-210

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Caution:

1. When a cassette is used while the copier is in full-color copying mode, a jam will occur if a medium of a type not selected on the control panel (copy paper or transparency) is detected.
2. A jam will occur if a medium of a type not selected on the control panel (copy paper or transparency) is fed while the copier is in mono-color copying mode.

Reference:

1. Instruct the user to place a thick sheet of paper (backing paper) under a stack of transparencies in the cassette.
2. Instruct the user to separate individual transparencies as by fanning them out before placing them in the cassette or on the multifeeder.

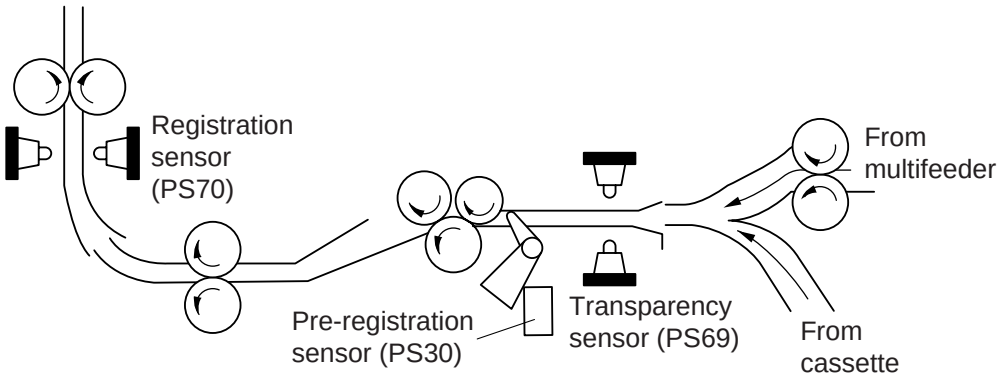

Figure 7-211

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III. DUPLEXING UNIT (CLC1150 ONLY)

A. Outline

1. Basic Construction

Item	Description
Duplexing tray capacity	50 sheets (of 105 g/m^2 paper)
Fixing motor (M5)	Drives the delivery system.
Delivery paper deflecting plate solenoid (SL10)	Used to switch the paper path (external delivery and delivery vertical path)
Duplexing motor (M14)	DC motor; used to drive the delivery vertical path/ duplexing unit system.
Delivery vertical path clutch (CL19)	Turns on/off the delivery vertical path roller 2/3.
Duplexing feed clutch (CL14)	Turns on/off the duplexing paper feed roller.
Stopper plate solenoid (SL12)	Drives the stopper plate.
Duplexing paper feed roller solenoid (SL13)	Releases the duplexing paper feed roller.
Stacking guide plate solenoid (SL15)	Drives the stacking guide plate.
Paper jogging motor (PM14)	Drives the paper jogging guide.
Re-pickup motor (PM13)	Stepping motor used to drive the re-pickup system.
Re-pickup clutch (CL15)	Turns on/off the duplexing separation roller and duplexing feed roller.
Related error code	E017 Error in the duplexing motor. E051 Error in the paper jogging motor.

Table 7-301

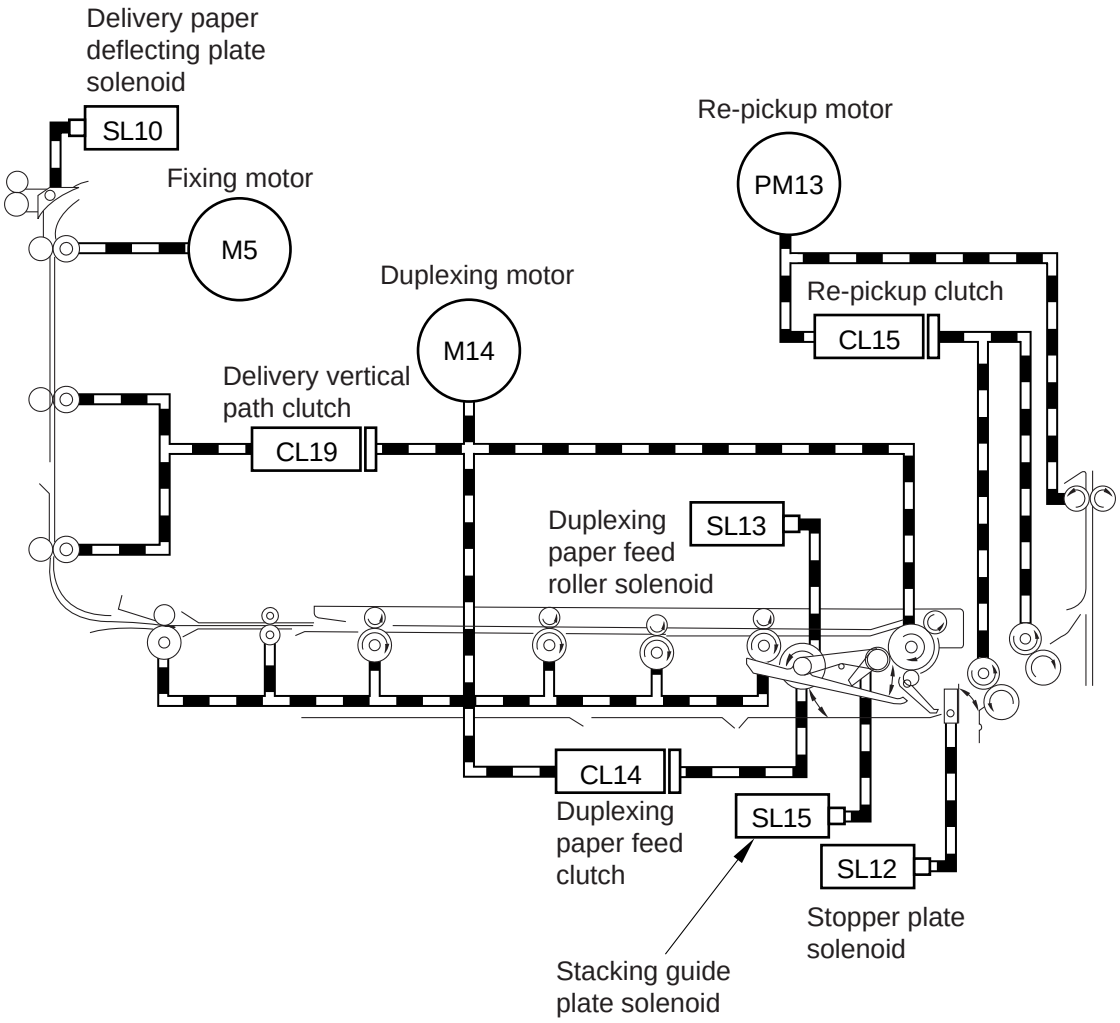

Figure 7-301 Duplexing Drive System

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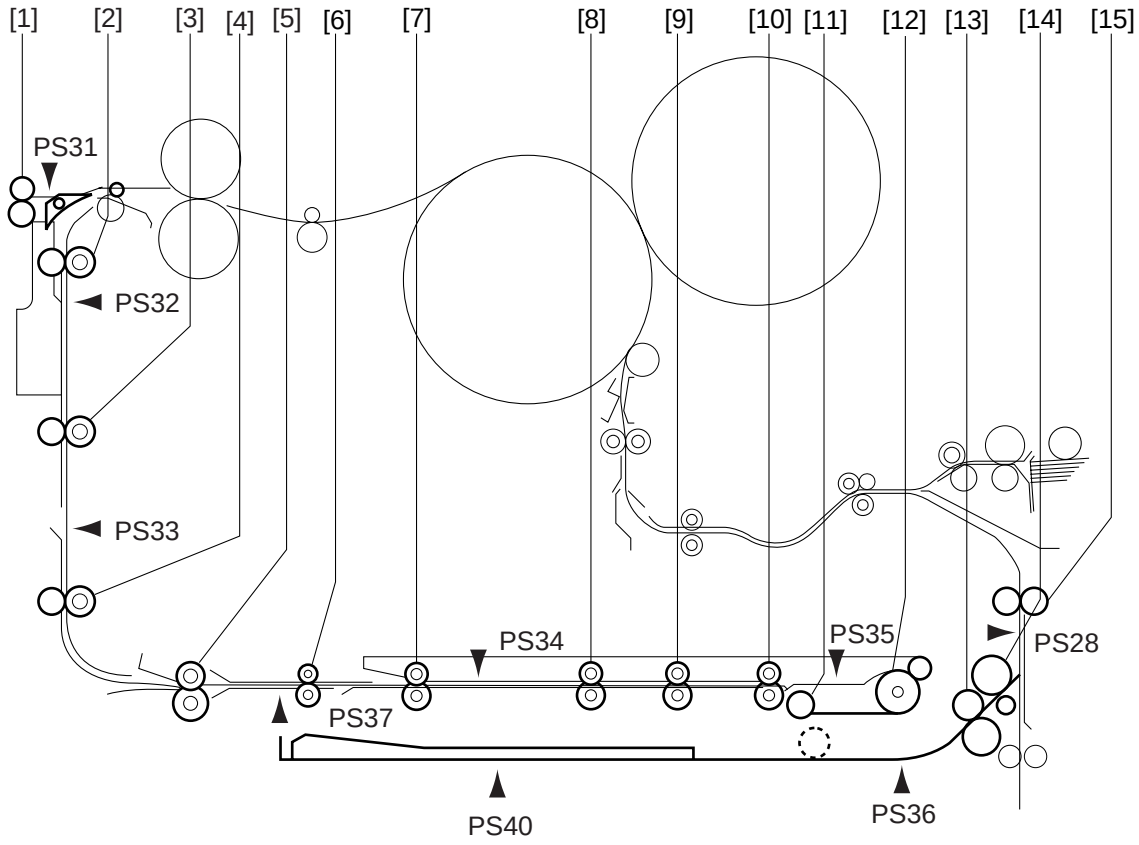
2. Arrangement of Rollers and Sensors



[1] External delivery roller
[2] Delivery vertical path roller 1
[3] Delivery vertical path roller 2
[4] Delivery vertical path roller 3
[5] Duplexing inlet roller
[6] Duplexing path roller 1
[7] Duplexing path roller 2
[8] Duplexing path roller 3
[9] Duplexing path roller 4
[10] Duplexing path roller 5
[11] Duplexing paper feed roller
[12] Duplexing reversing roller
[13] Duplexing separation/feed roller
[14] Re-pickup feed roller
[15] Pickup vertical path roller 1

Figure 7-302 Arrangement of Rollers and Sensors

Notation	Name	Notation	Name
PS28	Re-pickup vertical path sensor	PS35	Duplexing reversal paper sensor
PS31	External delivery paper sensor	PS36	Duplexing tray paper sensor
PS32	Delivery vertical path 1 sensor	PS37	Duplexing inlet paper sensor
PS33	Delivery vertical path 2 sensor	PS40	Paper jogging guide HP sensor
PS34	Duplexing path sensor		

Table 7-302 Sensors

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B. Stacking Paper

When its side has been processed, copy paper is moved to the delivery vertical path assembly as the delivery paper deflecting plate solenoid (SL10) turns on. Then, it is moved through the duplexing path, and is turned over by the duplexing reversing roller.

At this time, the duplexing paper feed roller solenoid (SL13), stacking guide plate solenoid (SL15), and stopper plate solenoid (SL12) in the duplexing tray assembly turn on; as a result, the duplexing feed roller and the stacking guide plate move up, and the stopper plate shifts up to prepare for the arrival of copy paper.

Each time copy paper arrives at the duplexing tray assembly, the duplexing paper feed roller solenoid (SL13) turns off, and the duplexing paper feed roller moves down to the copy paper. At the same time, the stacking guide plate solenoid (SL15) turns off so that the copy paper will not curl, moving down the stacking guide plate to the copy paper. Thereafter, the duplexing paper feed roller rotates each time the duplexing paper feed clutch (CL14) turns on, butting the copy paper against the stopper plate.

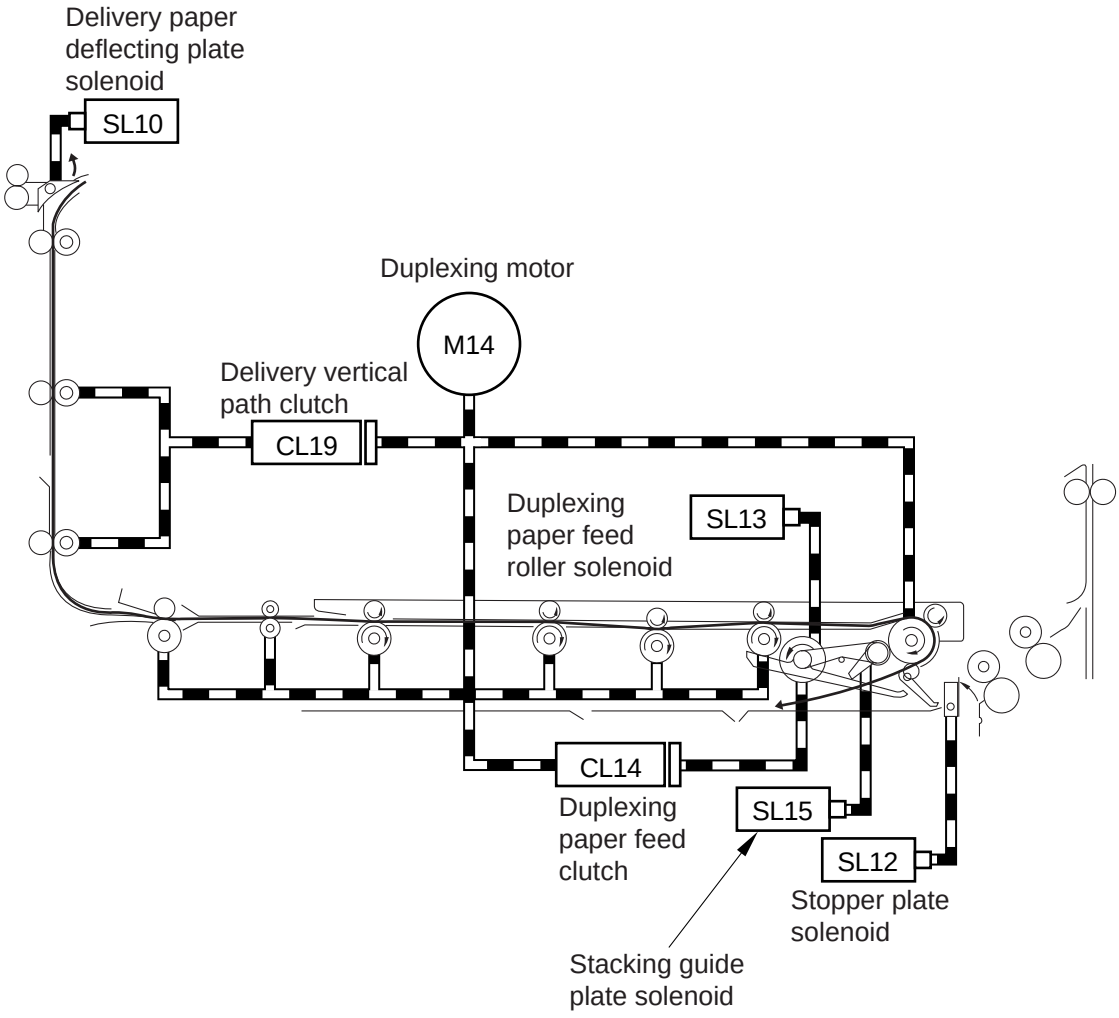

Figure 7-303

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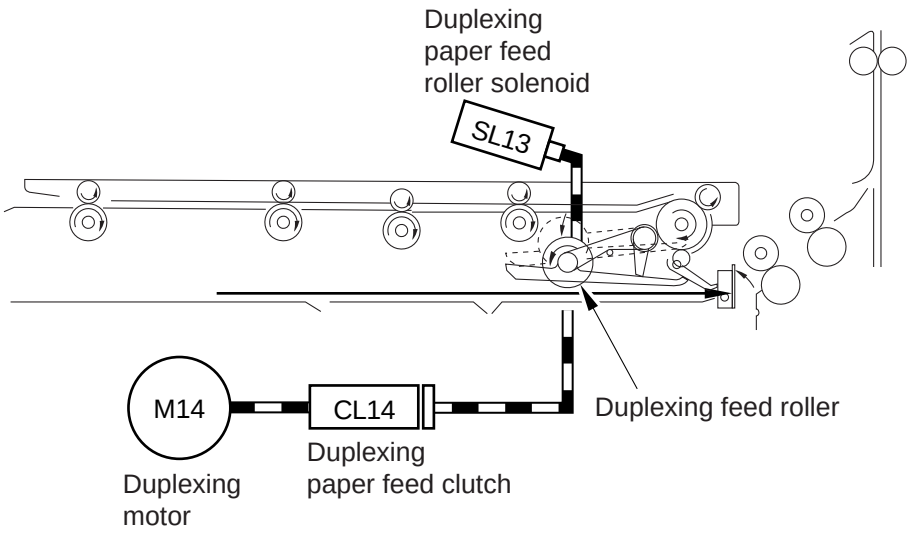

Figure 7-304

C. Movement of the Paper Jogging Guide Plate

1. Operations

The paper jogging guide plate operates to prevent skew movement and jamming during re-pickup by operating each time copy paper arrives at the duplexing tray.

If the paper jogging guide HP sensor (PS40) does not turn on or off within a specific period of time after the paper jogging motor (PM14) has turned on, the copier indicates 'E051' on the control panel.

🕮 Volume 4>Chapter 7>III.C>4. "Controlling the Paper Jogging Guide Plate"

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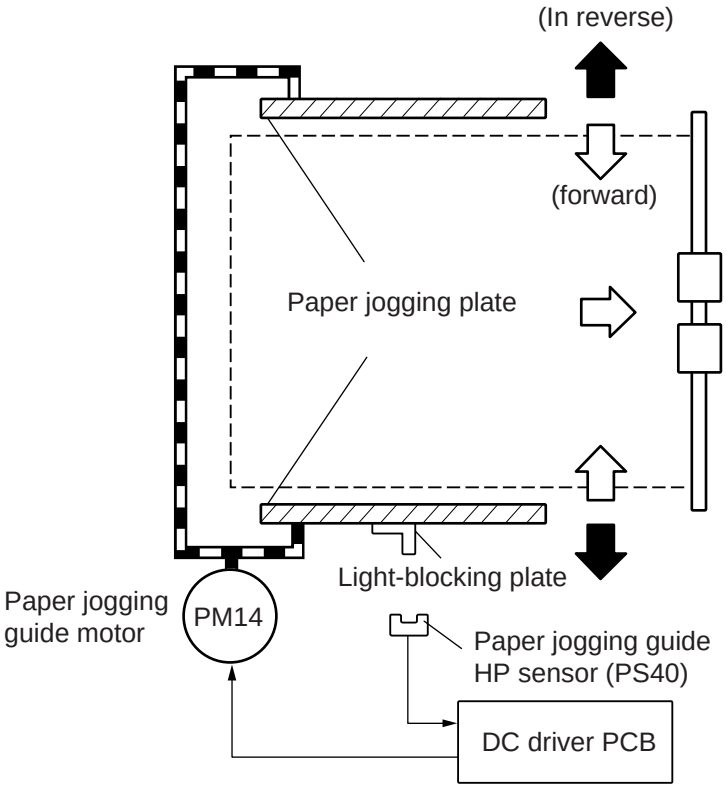

Figure 7-305a Duplexing Tray (top view)

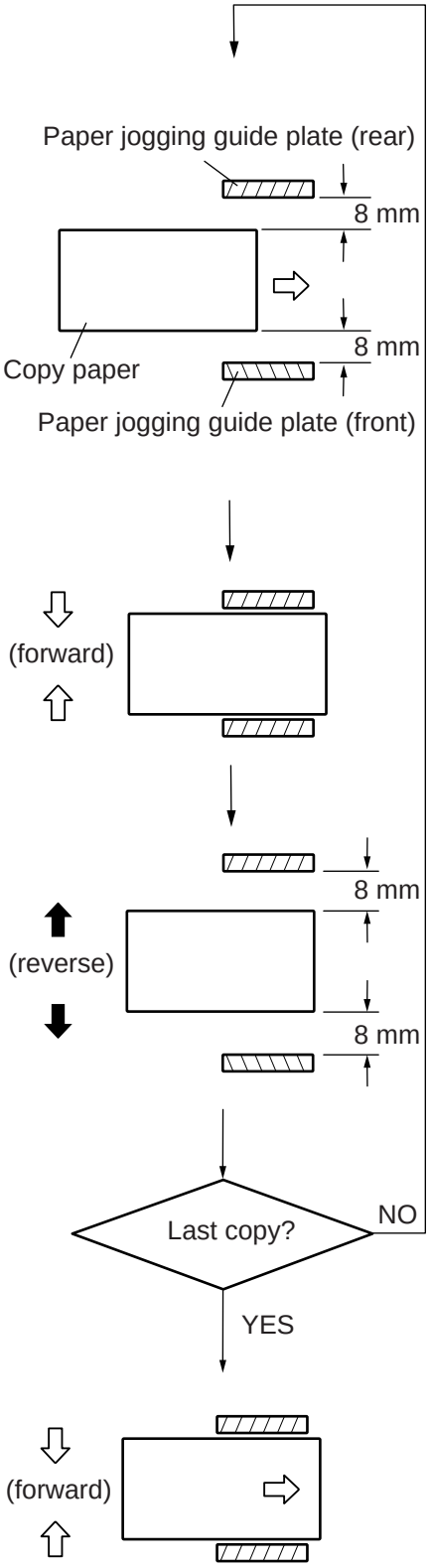

Figure 7-305b Paper Jogging Operation

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D. Sequence of Operations (1st side of a double-sided copy)

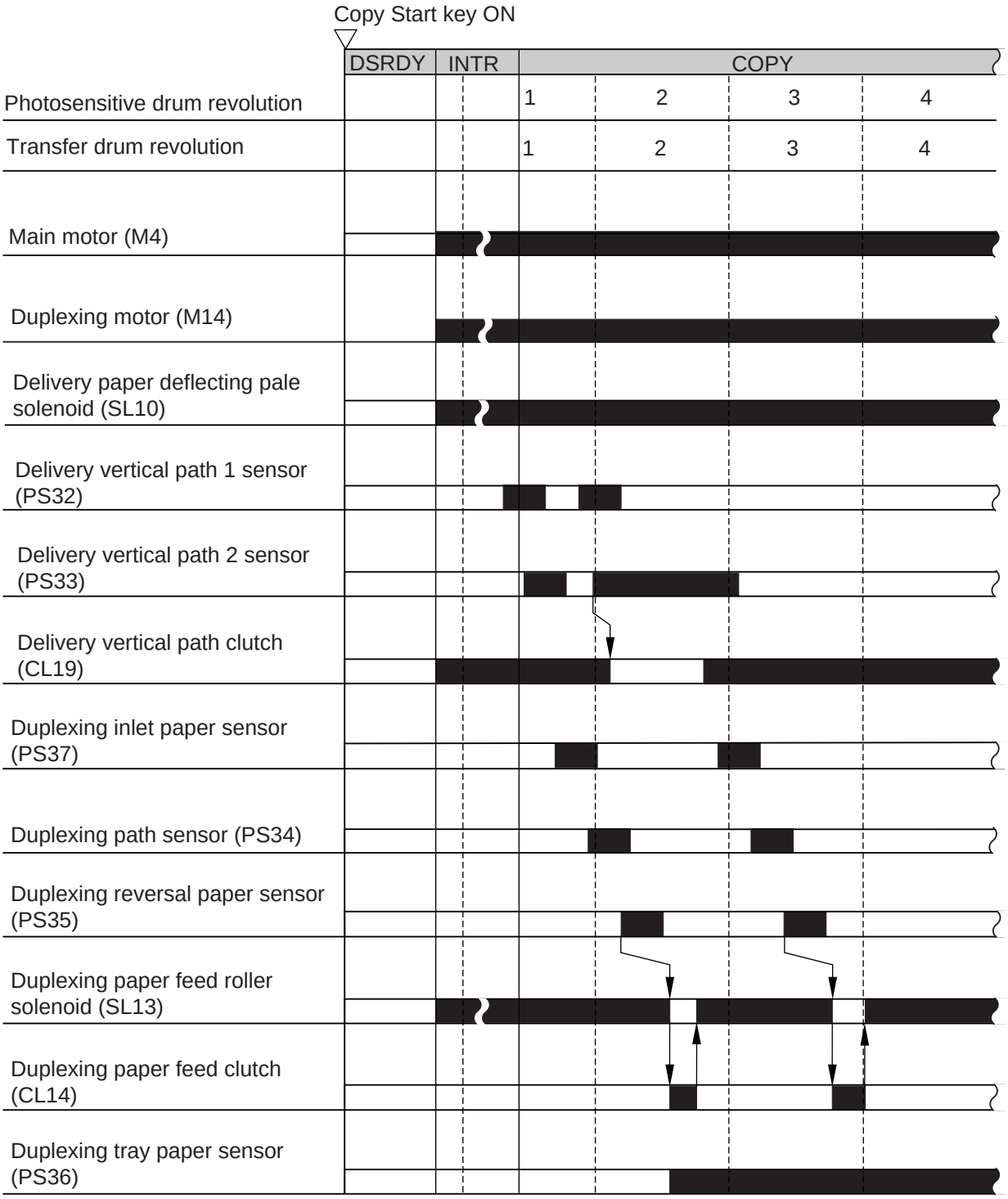

Figure 7-306

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E. Re-Pickup from the Duplexing Unit

1. Operations

When copying on the second side of a double-sided copy, pickup will be from the stack of copy paper on the duplexing tray.

The duplexing feed roller is lowered to prevent skew movement during re-pickup in response to a press on the Copy Start key or after copying on the first side, and the paper jogging guide plate is moved to a point 0.5 mm from copy paper.

Then, the stopper plate solenoid (SL12) turns off, and the stopper plate shifts down. When the duplexing paper feed clutch (CL14) and the re-pickup clutch (CL15) turn on, the duplexing paper feed roller and the duplexing separation/feed roller start to rotate by the drive of the duplexing motor (M14) and the re-pickup motor (PM13), respectively, to move the copy paper to the pickup vertical path assembly.

After re-pickup, the duplexing paper feed roller solenoid (SL13) turns on, and the duplexing paper feed roller moves away from the surface of the paper.

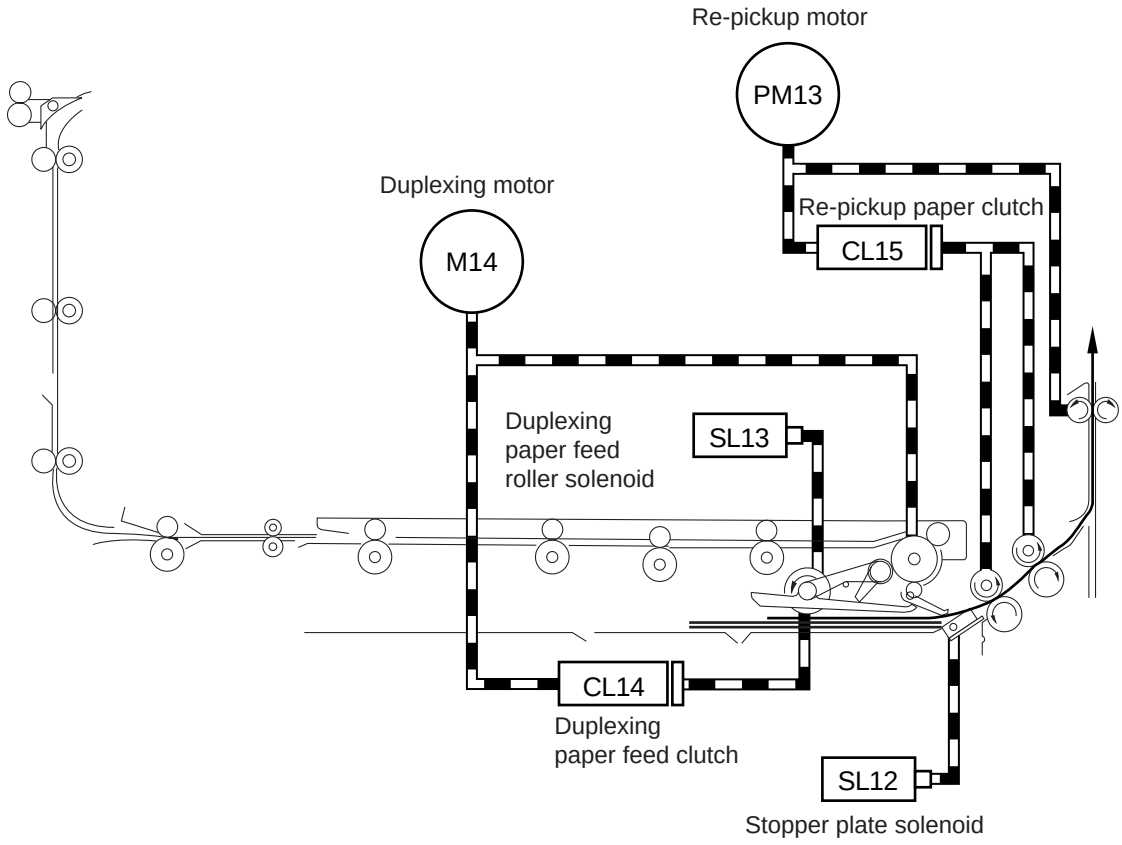

Figure 7-307

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2. Sequence of Operations

Duplexing Tray, A4, 2 Copies, Continuous, Full-Color, Direct

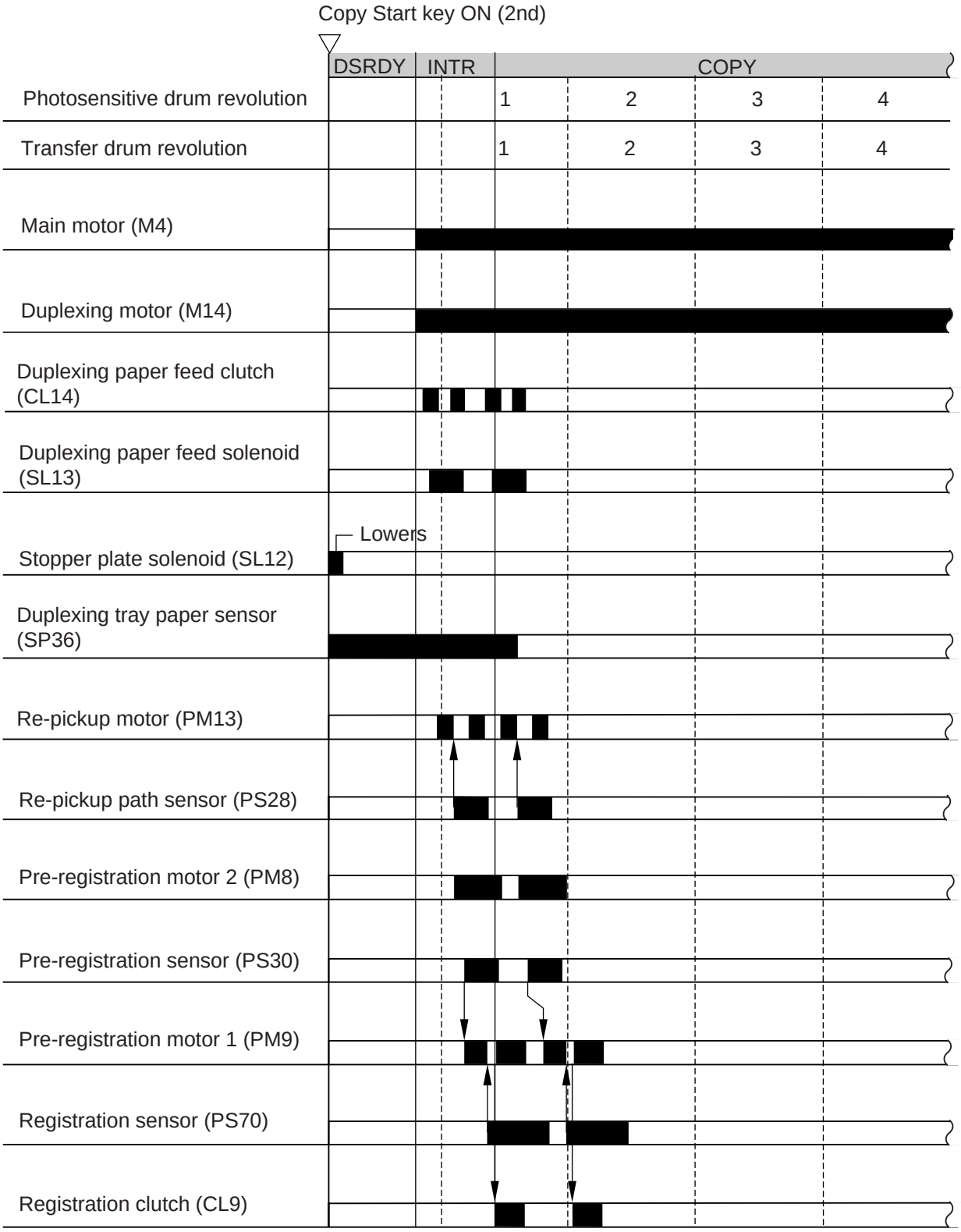

Figure 7-308

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IV. CONTROLLING THE REGISTRATION/ ATTRACTION MECHANISM

A. Outline

After pickup, copy paper is moved by the pre-registration rollers 1 and 2, and is caused to arch at the registration roller for removal of the skew. Then, it is moved as far as the attraction roller, which serves to keep the copy paper against the transfer drum sheet.

The rotation and locking/unlocking of the registration roller and the rotation of the attraction roller are driven by the main motor and through their respective solenoids/clutches.

Item	Description
Pre-registration motor 2 (PM8)	Stepping motor used to drive the pre-registration roller 2.
Pre-registration motor 1 (PM9)	Stepping motor used to drive the pre-registration roller 1.
Main motor (M4)	Drives the registration roller.
	Drives the attraction roller.
Registration clutch (CL9)	Turns on/off the registration roller.
Registration roller releasing solenoid (SL5)	Locks/unlocks the registration roller.
Attraction roller solenoid (SL6)	Locks/unlocks the attraction roller.

Table 7-401

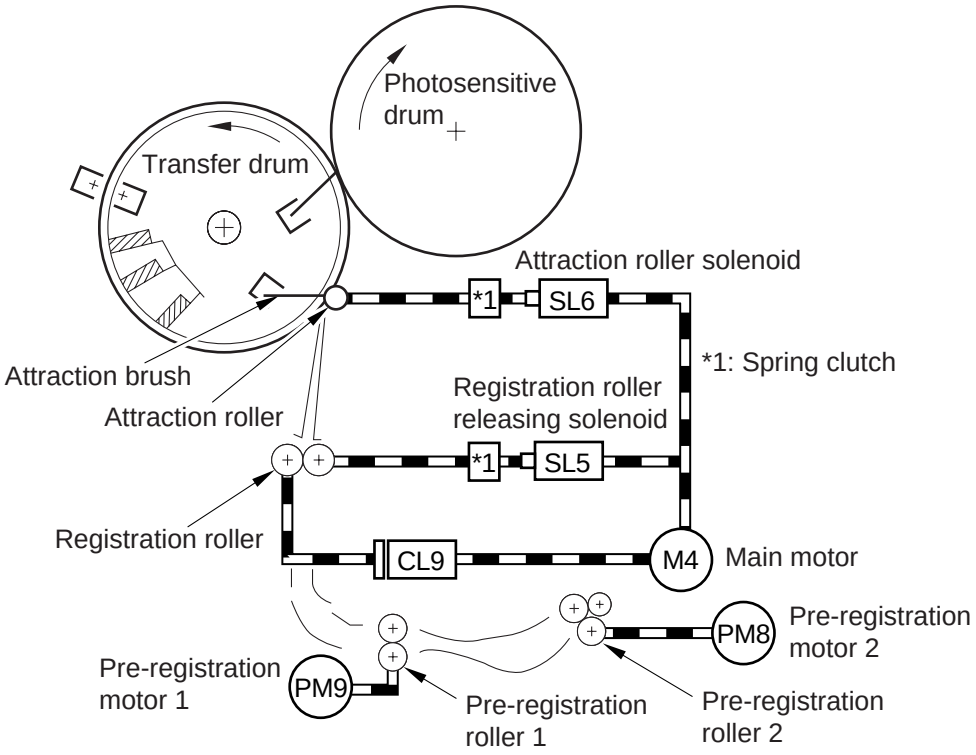

Figure 7-401

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B. Locking and Unlocking the Registration Roller

When copy paper from the registration roller is put on the transfer drum sheet, the registration roller releasing solenoid (SL5) turns on, causing the registration locking cam to rotate and, at the same time, releasing the registration link roller from the registration roller by the drive of the main motor (M4).

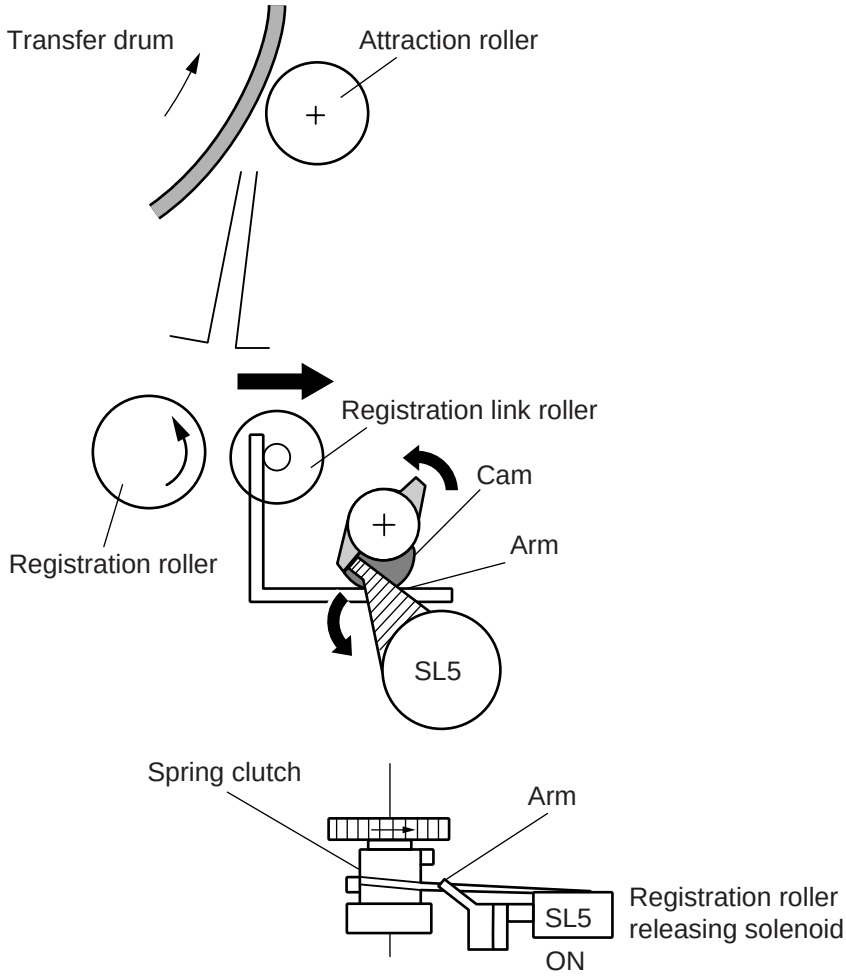

Figure 7-402

C. Controlling the Attraction Mechanism

The copier's transfer drum is designed to retain copy paper on the transfer drum sheet using static charges.

During copying operation, the attraction roller solenoid (SL6) remains on for a period of time equal to the length of the copy paper to bring the attraction roller in contact with the transfer drum sheet. At this time, the attraction brush turns on, causing the transfer drum sheet to attract the copy paper.

Reference:

1. In the case of a mono-color copy, the copy paper is separated before the transfer drum completes a full rotation. As such, SL6 remains on at all times without turning off.
2. In the case of retaining two sheets of paper, SL6 does not turn off between the first and second sheets.

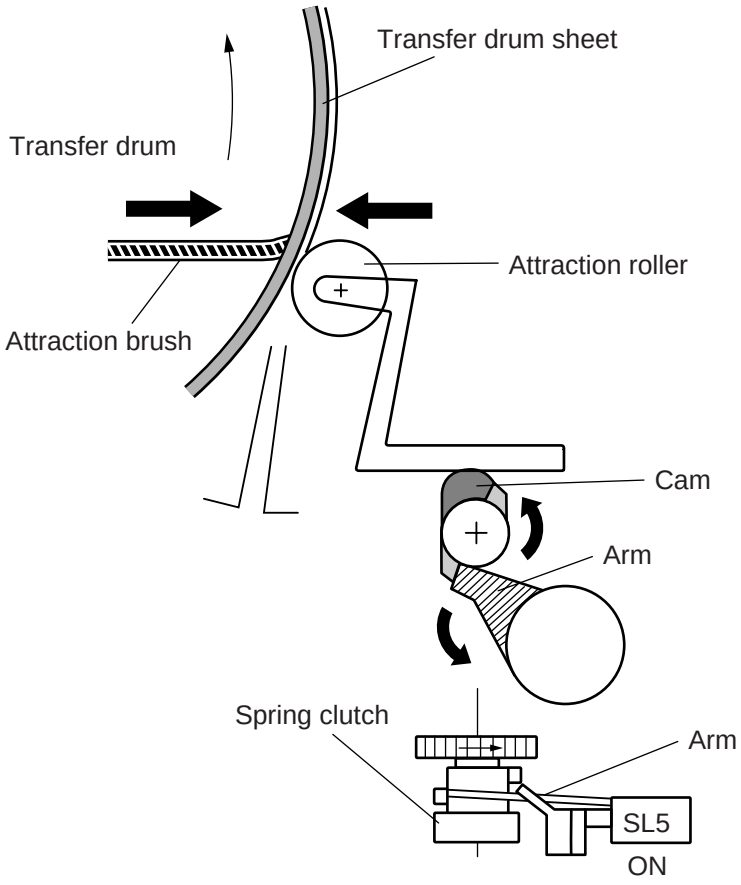

Figure 7-403

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D. Sequence of Operations (registration/attraction)

Cassette 1, A4, 2 Copies, Continuous, Full Color, Direct

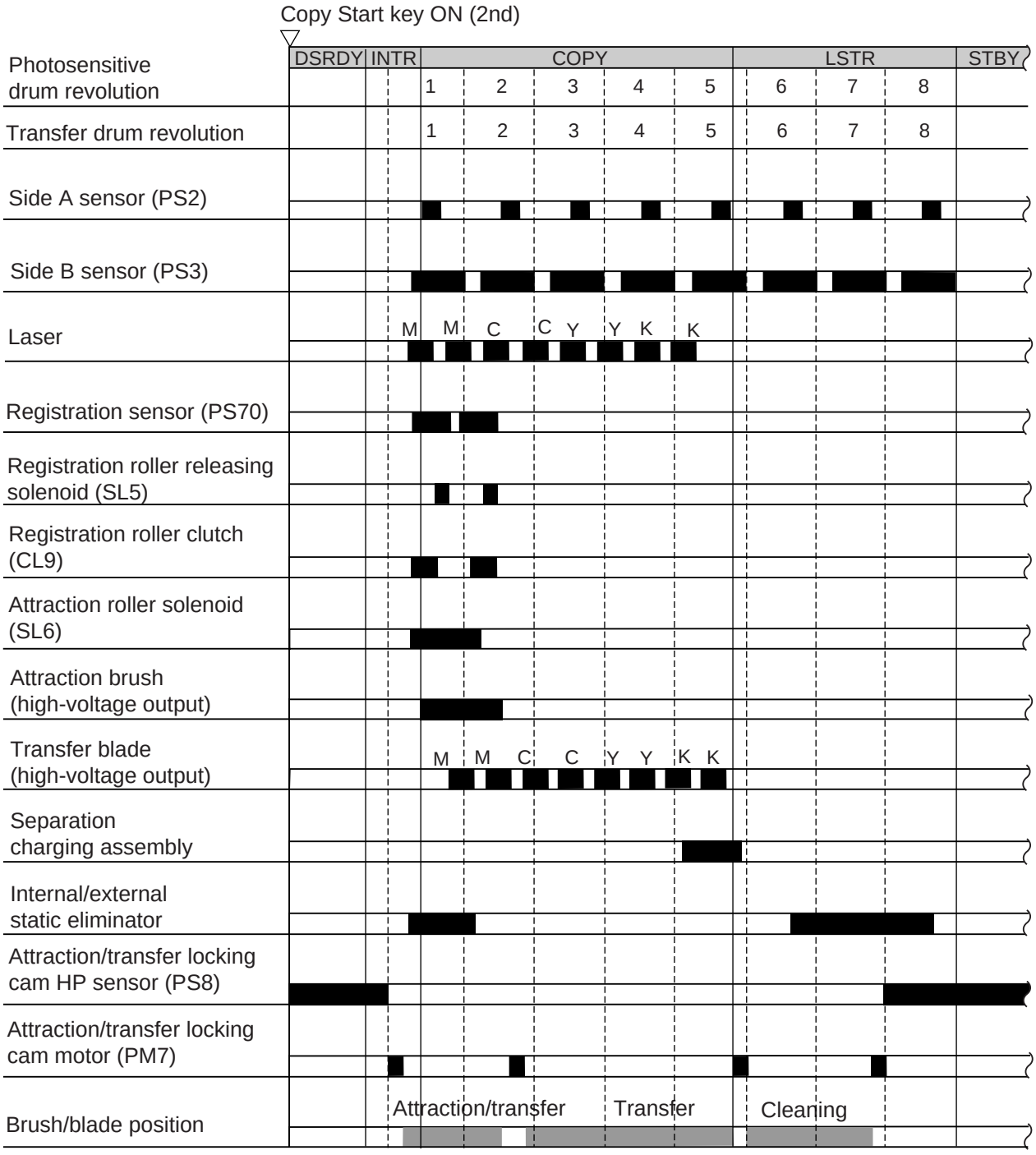

Figure 7-404

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V. TRANSFER DRUM

A. Outline

The transfer drum is constructed as shown in Figure 7-501.

The transfer drum keeps copy paper against the transfer drum sheet using static charges, and sends it to the fixing assembly after transfer (maximum of four times).

Item	Description
Transfer rum locking motor (PM5)	Stepping motor used to lock and unlock the transfer drum unit to and from the photosensitive drum by the work of a cam (remains locked as long as the transfer drum is rotating).
Drum motor (M2)	Used to drive the transfer drum by way of the photosensitive drum.
Main motor (M4)	Drives the registration roller and the attraction roller.
Transfer drum cleaner locking motor (PM6)	Stepping motor used to lock and unlock the transfer drum cleaner.
Attraction/transfer locking cam motor (PM7)	Stepping motor used to drive the attraction brush, transfer blade, and push-on brush.
Transfer drum cleaner brush motor (M8)	DC motor used to drive the transfer drum cleaner brush.
Polishing roller motor (M9)	DC motor used to drive the polishing roller.
Separation push-up solenoid (SL3)	Drives the separation push-up roll.
Separation claw solenoid (SL4)	Drives the separation claw.
Pre-transfer paper sensor (PS5)	Detects a jam before transfer.
Post-transfer paper sensor (PS6)	Detects a jam after transfer.
Separation sensor (PS7)	Detects a jam in the separation assembly.
Attraction/transfer locking cam HP sensor (PS8)	Detects the home position (release position) of the attraction/transfer locking cam.
Transfer drum HP sensor (PS57)	Detects the home position (release position) of the transfer drum unit.
Transfer drum cleaner HP sensor (PS59)	Detects the home position of the transfer drum cleaner unit.

Table 7-501

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Related Error Code

E012	Error in the drum motor.
E072	Error in the transfer cleaner locking motor, transfer drum cleaner brush motor, or polishing roller motor.
E073	Error in the drawer connector of the transfer unit or transfer unit lever.
E074	Error in the transfer drum unit home position.
E079	Error in the transfer drum cleaner unit home position.

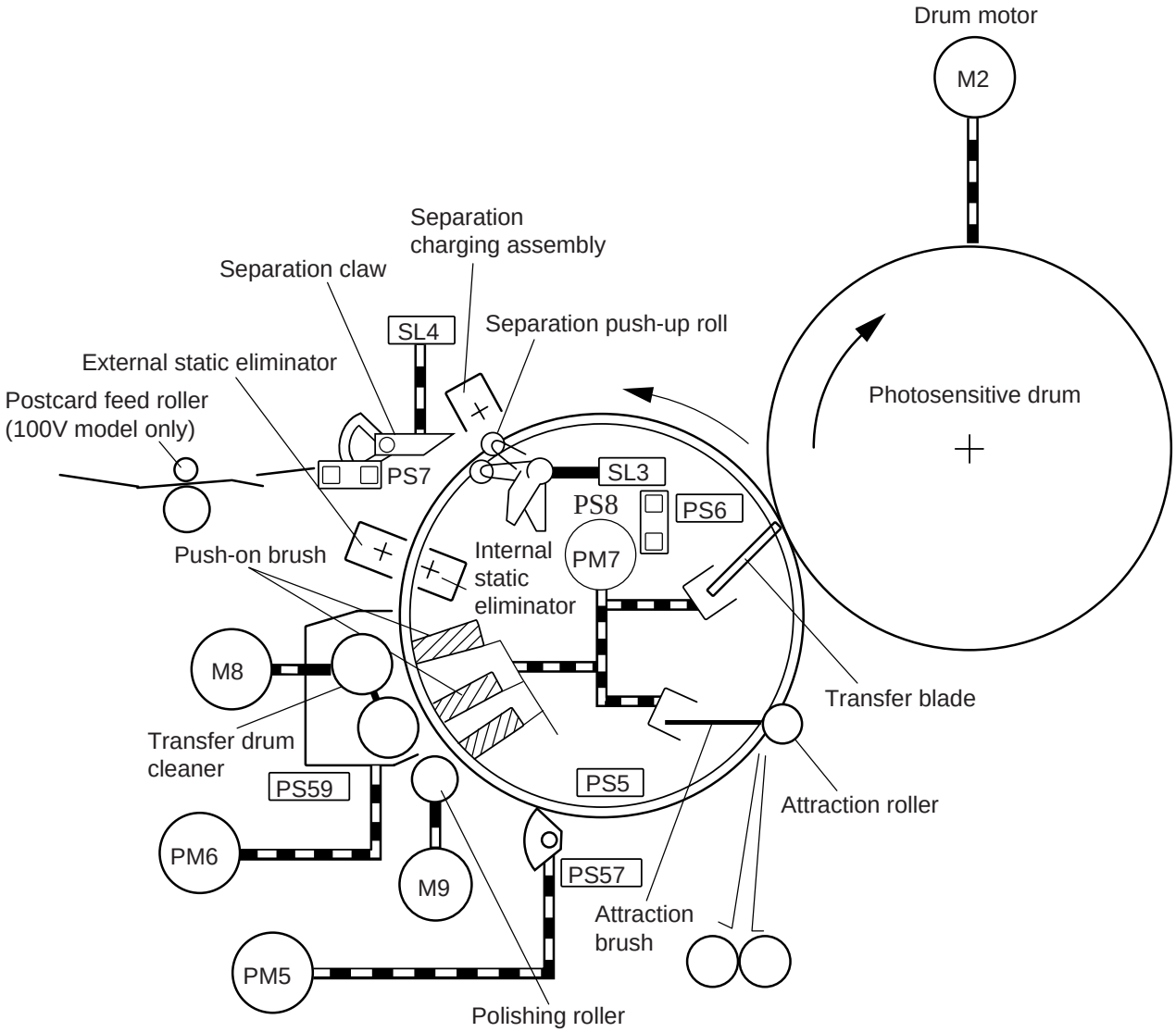

Figure 7-501

B. Controlling the Locking Cam Inside the Transfer Drum

The transfer drum houses the attraction brush, transfer blade, and an internal brush for cleaning. Each brush or blade is away from the transfer drum sheet, and is brought against the transfer drum sheet by its respective locking cam when the attraction/transfer locking cam motor (PM7) turns on as needed. (See Figure 7-502.)

The copier's attraction/transfer locking cam motor is a stepping motor, and the locking mechanism of each brush and blade is operated by controlling the rotation of the three locking cams through application of specific pulses to the motor after the DC-CPU identifies home position with reference to the signal from the attraction/transfer locking cam HP sensor (PS8).

Figure 7-503 shows the state of each brush and the blade, varying according to the position of the locking cam.

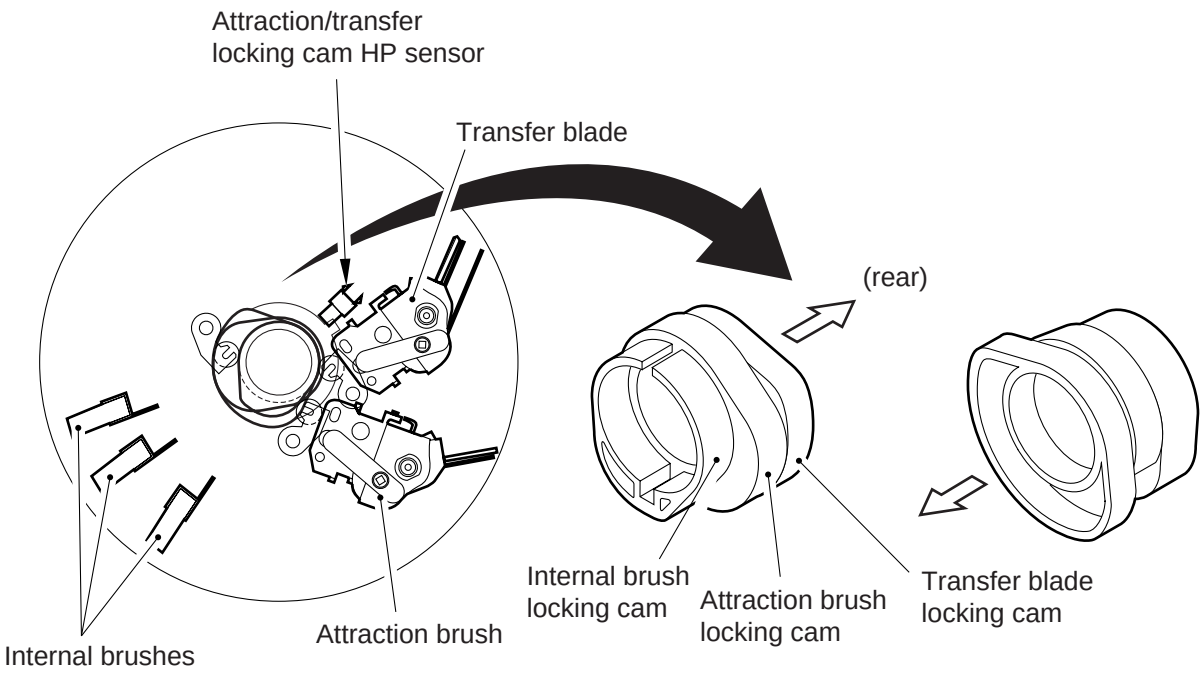

Figure 7-502

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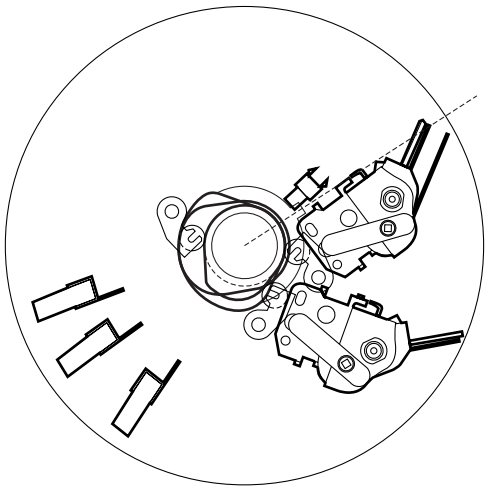
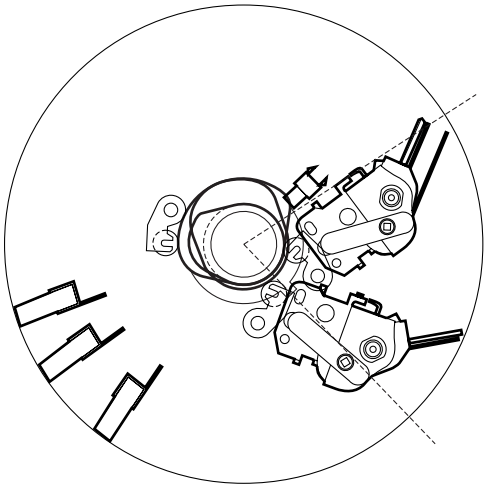
Position of the locking cam	State
Home position 	The attraction brush, transfer blade, and inside brush are all off.
During attraction and transfer of 1st color 	The attraction brush and the transfer blade are on; the inside brush is off.

Figure 7-503a

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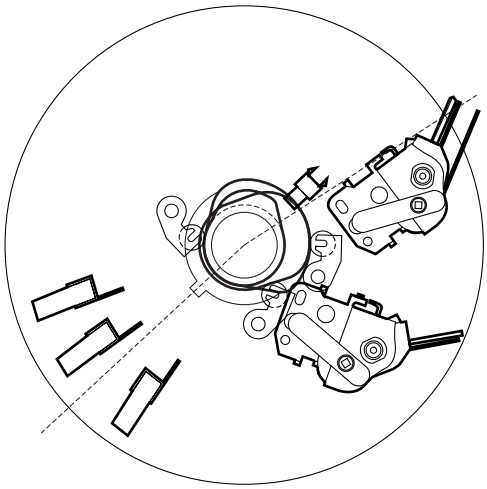
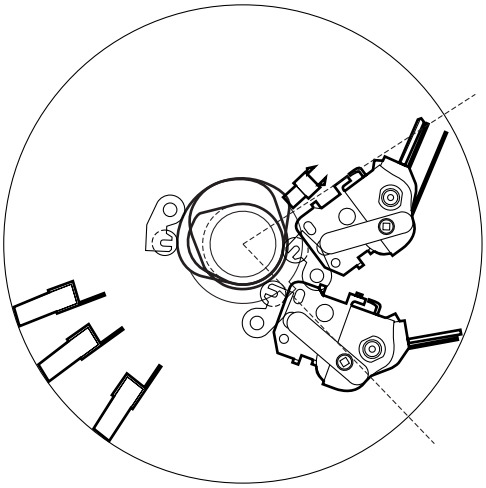
Position of the locking cam	State
During transfer of 2nd to 4th color 	The transfer blade is on; the attraction brush and inside brush are off.
During transfer drum cleaning 	The inside brush is on; the attraction brush and transfer blade are off.

Figure 7-503b

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C. Controlling Separation

1. Outline

Copy paper retained by the transfer drum is separated by the separation claw and the separation push-up roll regardless of how it is placed (side A or B). (See Figure 7-505.)

📖 Volume 4>Chapter 6>IV.B>b. “Claw and Push-Up Roll”

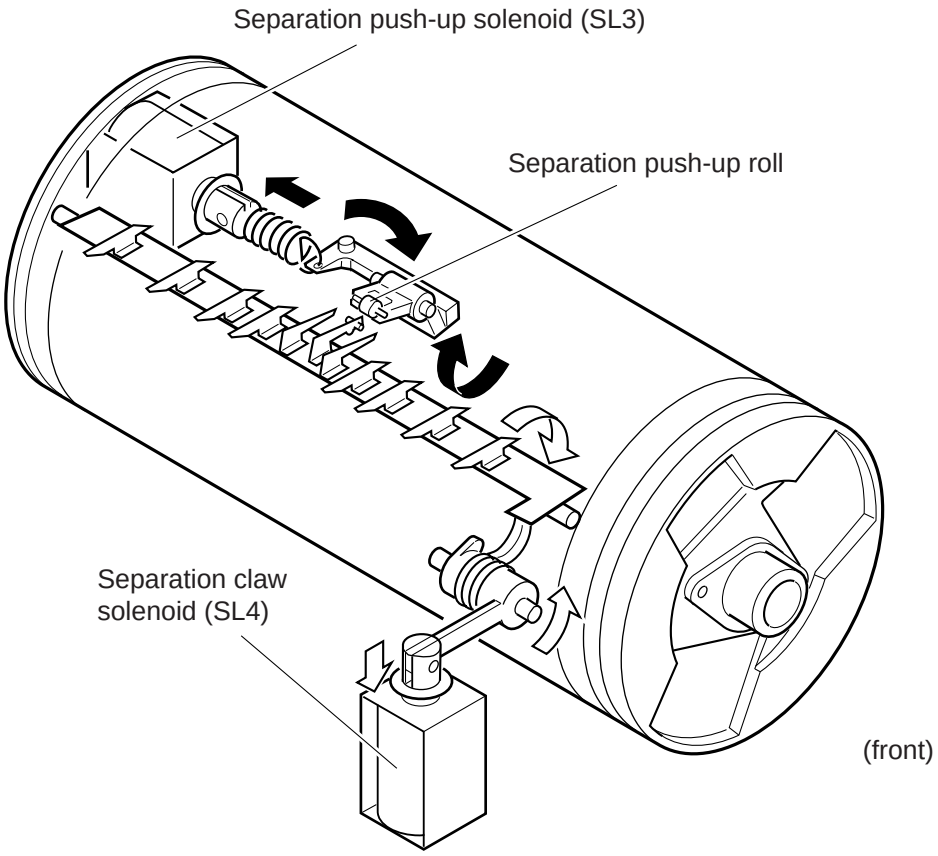
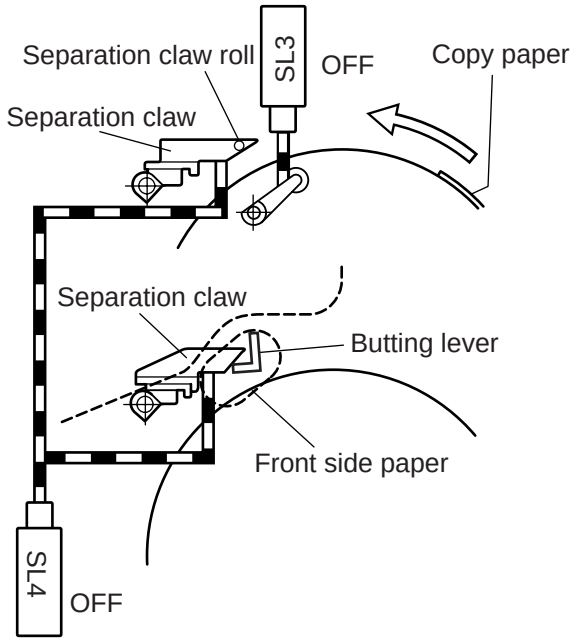


Figure 7-504

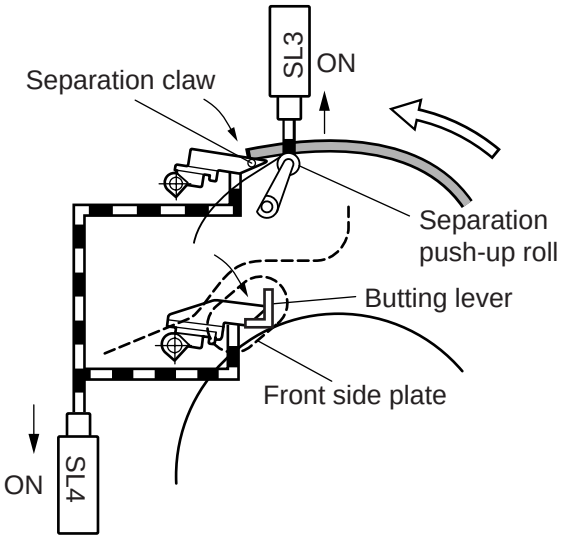
2. Separating Paper

[1]



The figure shows the state immediately after transfer to copy paper, and both the separation solenoid (SL4) and the separation push-up solenoid (SL3) are off.

[2]



The separation claw solenoid (SL4) and the separation push-up solenoid (SL3) turn on. This way, the separation claw roll is brought into contact with the transfer drum sheet. The separation claw is away from the transfer drum sheet over a distance equal to the thickness of the separation claw roll. The separation push-up roll pushes up the transfer drum sheet from inside by the work of SL3, changing the shape of a portion of the transfer drum sheet and, thereby, increasing the curvature.
Thereafter, the body of the copy paper causes its leading edge to separate from the transfer drum sheet, and the separation claw slides into the gap to start separation.
At this time, the butting lever of the separation claw comes into contact with the front side plate of the transfer drum unit so as to maintain the height of the separation claw.

Figure 7-505

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D. Cleaning the Separation Drum Sheet

1. Outline

The transfer drum sheet uses static charges to keep and move copy paper and, as such, it is subject to adhesion of foreign matter. The presence of foreign matter on the transfer drum sheet can soil the back of copy paper and can lead to an attraction fault or transfer fault.

To prevent such a problem, the transfer drum sheet is cleaned as follows:

Type	Timing	Cleaner
Normal cleaning (including double-sided copying)	During last rotation	External brush/internal brush
Special cleaning	During last rotation after making a specific number of copies	Polishing roller

Table 7-502

Reference:

The copier uses a limited amount of fixing oil, and therefore is not equipped with a cleaning mechanism operated by an oil removing roller.

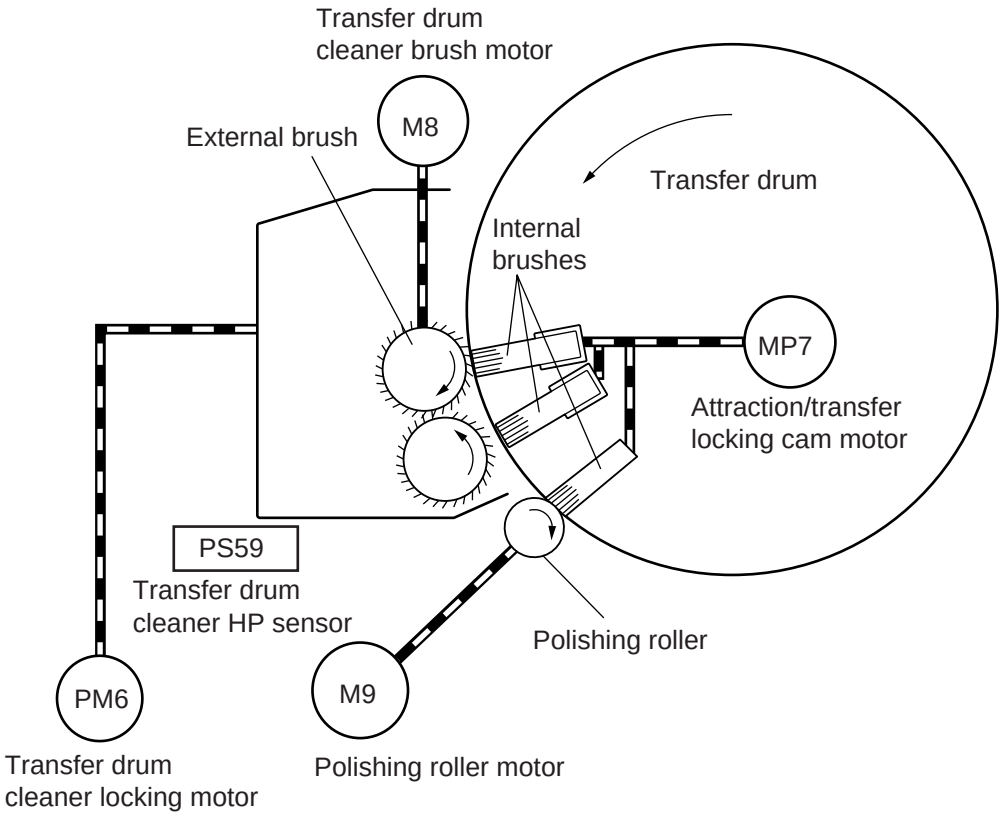

Figure 7-506

2. External Brush

As many as two external brushes are provided: by the drive of the transfer drum cleaner motor (M8), the upper brush rotates in the same direction as the transfer drum, while the lower brush rotates in the opposite direction at a high speed. The toner and paper lint cleaned by the brushes are collected inside the cleaner unit.

The transfer drum cleaner unit houses external brushes. When the transfer drum cleaner locking motor (PM6) turns on, its drive is transmitted to the cam.

The motor (PM6) is a stepping motor, and is used to control the position where the transfer drum cleaner is locked or unlocked by applying specific pulses to the motor after the DC-CPU has detected home position with reference to the signal from the transfer drum cleaner HP sensor (PS59).

At the same time, the internal brushes are also butted against the inner side of the transfer drum sheet opposite the external brushes by the work of the cam inside the transfer drum operated by the drive of the attraction/transfer locking cam motor (PM7).

The position of toner used to detect the concentration of each color toner on the photosensitive drum comes face-to-face with the transfer drum linking plate in reference to the transfer drum; as such, cleaning is performed so that a width in front of and behind the transfer drum linking plate is brushed twice.

Table 7-503 shows the conditions and the length of operation for cleaning the transfer drum sheet:

Condition	Length of time
During last rotation after making 1 to 9 copies (copy count)	Equivalent of 1 rotation of the transfer drum
During last rotation after making 10 to 49 copies (copy count)	Equivalent of 2 rotations of the transfer drum
During last rotation making 50 to 100 copies (copy count)	Equivalent of 3 rotations of transfer drum
During last rotation after making 101 or more copies (copy count)	Equivalent of 4 rotations of the transfer drum
During jam recovery	Equivalent of 3 rotations of the transfer drum

Table 7-503

3. Polishing Roller

As the copier is used more and more, the surface of its transfer drum sheet tends to collect paper lint and, as a result, its power of attraction will decrease. To prevent such a phenomenon, the surface of the transfer drum sheet is polished after making a specific number of copies, thereby restoring the power of attraction.

When the polishing roller motor (M9) turns on, the drive belt and the drive gear start to rotate to rotate the spring clutch. Then, the work of the polishing roll locking spring causes the polishing roller to butt against the transfer drum sheet (while rotating and pivoting on the shaft of the motor) and face-to-face with the internal brushes.

At this time, the internal brushes are also butted against the transfer drum sheet, and the surface of the transfer drum is polished in this condition.

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The polishing roller is unlocked and moved away from the transfer drum sheet by rotating the motor (M9) in reverse.

Table 7-504 shows the condition and length of operation of the polishing roller.

Condition	Length
During last rotation after 1000 copies (cumulative)	Equivalent of 50 rotations of the transfer drum

Figure 7-504

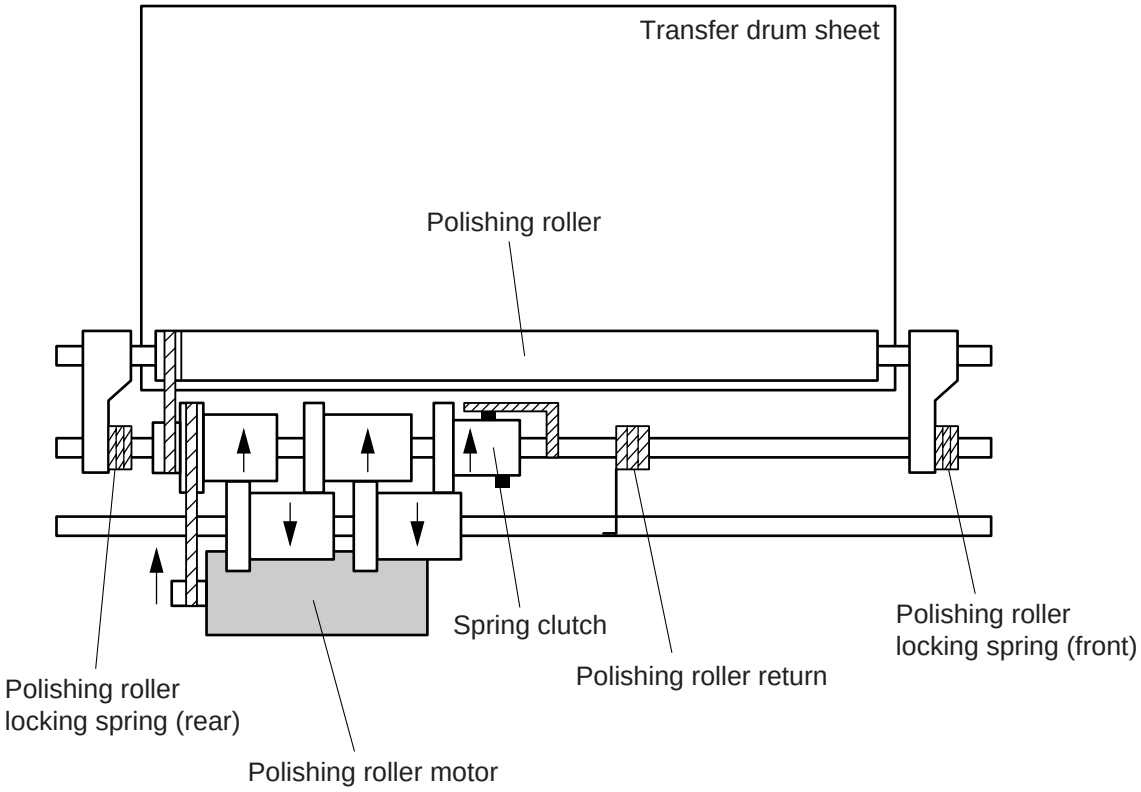

Figure 7-507

E. Sequence of Operations (transfer drum)

A4LTR, 2 Copies, Full-Color, Direct, Cassette 1

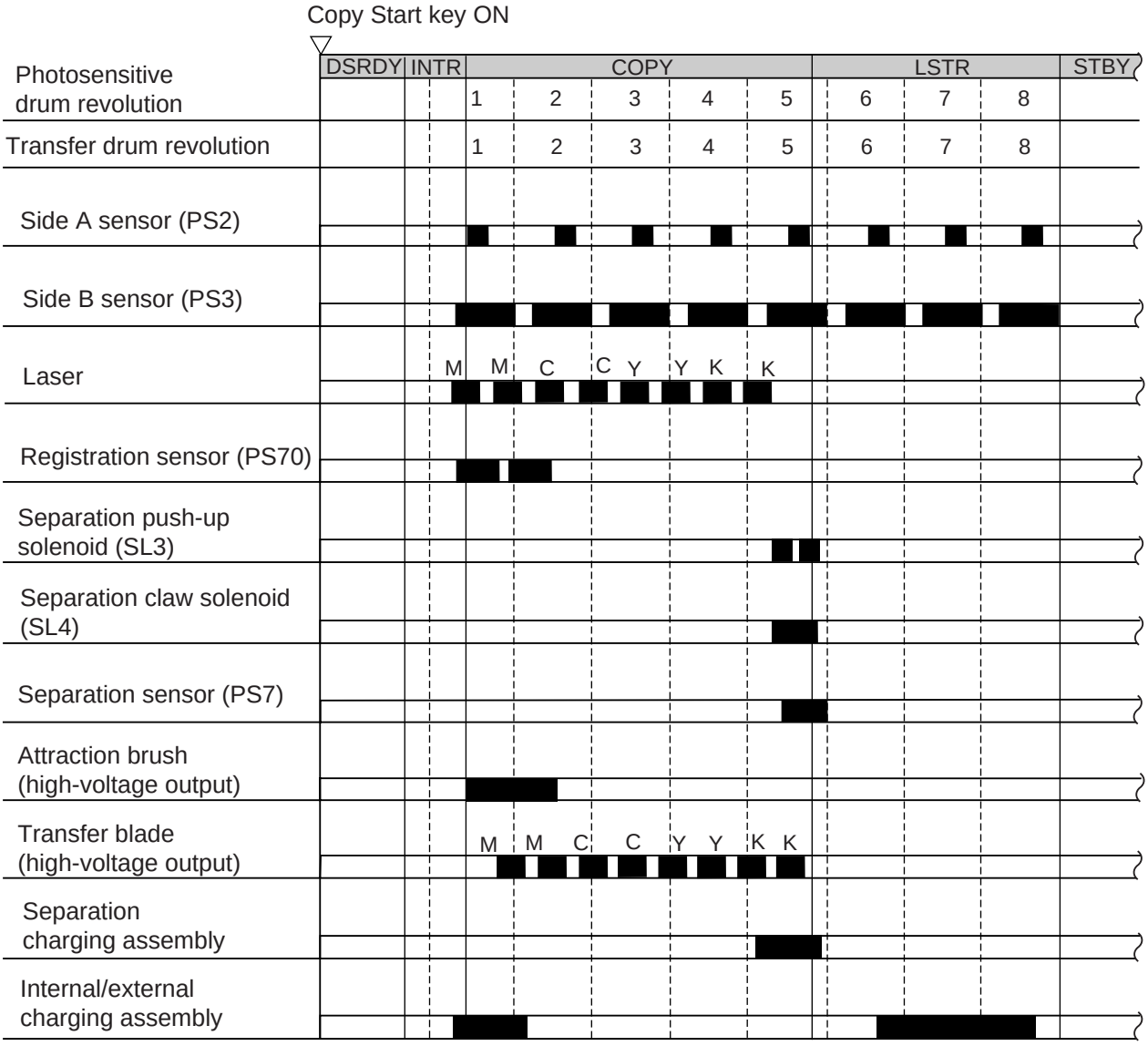

Figure 7-508

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VI. DETECTING JAMS

A. Outline

Table 7-601 shows the sensors used to monitor the presence/absence and movement of copy paper.

Notation	Name	Remarks
PS5	Pre-transfer sensor	
PS6	Post-transfer sensor	
PS7	Separation sensor	
PS9	Multifeeder pickup sensor	
PS12	Internal delivery sensor	
PS21	Pickup vertical path 1 sensor	CLC1120/1130 only
PS26	Pickup vertical path 2 sensor	
PS27	Pickup vertical path 3 sensor	CLC1130/1150 only
PS28	Re-pickup path sensor	CLC1150 only
PS30	Pre-registration sensor	
PS31	External delivery sensor	
PS32	Delivery vertical path 1 sensor	CLC1150 only
PS33	Delivery vertical path 2 sensor	CLC1150 only
PS34	Duplexing path sensor	CLC1150 only
PS35	Duplexing reversal paper sensor	CLC1150 only
PS36	Duplexing tray paper sensor	CLC1150 only
PS37	Duplexing inlet paper sensor	CLC1150 only
PS69	Transparency sensor	
PS70	Registration sensor	
PS71	Pre-cleaning paper sensor	

Table 7-601

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The presence of paper or a jam is checked in terms of the presence/absence of paper at a specific sensor at such times as programmed in advance.

The copier is capable of remembering the number of copies remaining to be made and the selected copying mode so that the copy count or the copying mode need not be set once again if it has been opened and closed for jam removal.

If any of the sensors detects paper when the power is turned on or the door is closed, the copier will identify the condition as being a jam.

If a jam occurs during continuous copying, on the other hand, the copier continues to make copies on paper that has already been picked up.

The pre-cleaning paper sensor (PS71) is a reflecting type paper sensor, and it detects paper on the photosensitive drum to prevent copy paper from rushing into the photosensitive drum cleaner (occurring often when double feeding takes place).

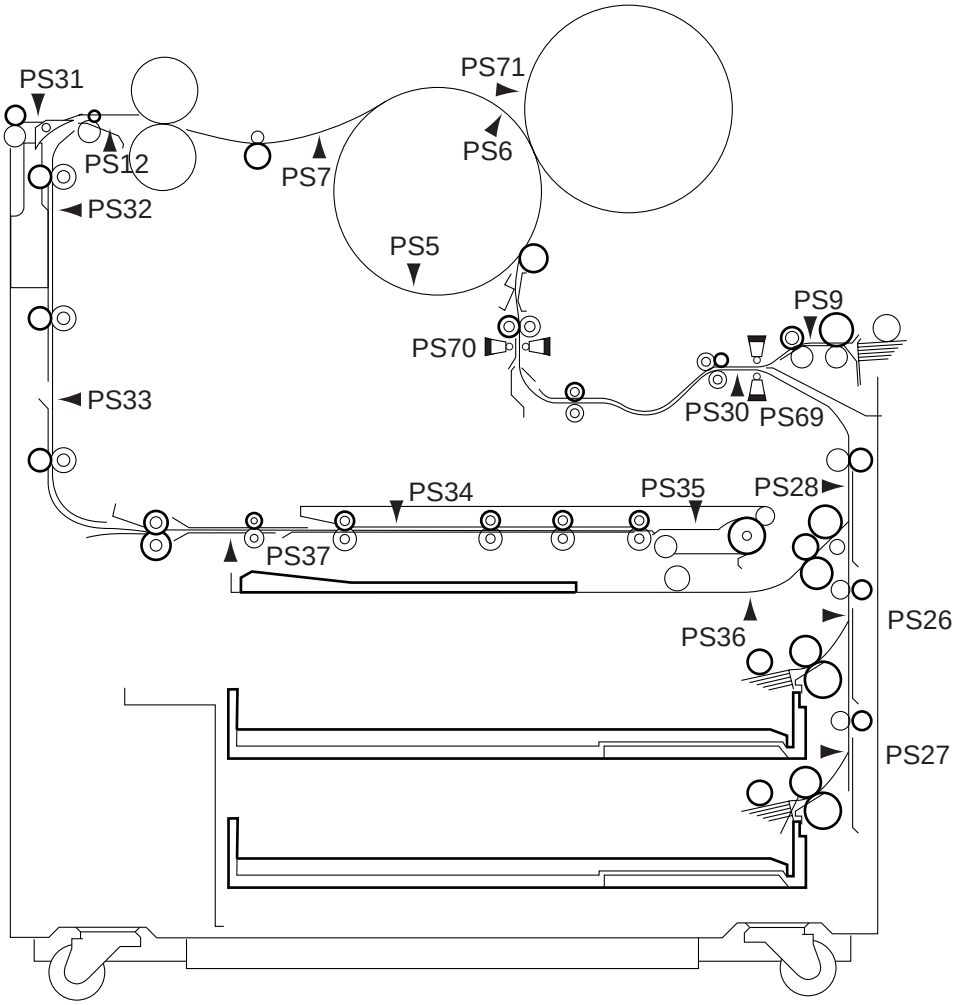

Figure 7-601

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B. Sequence of Operations (jam detection)

A4/LTR, 1 Copy, Full-Color, Direct, Cassette 1

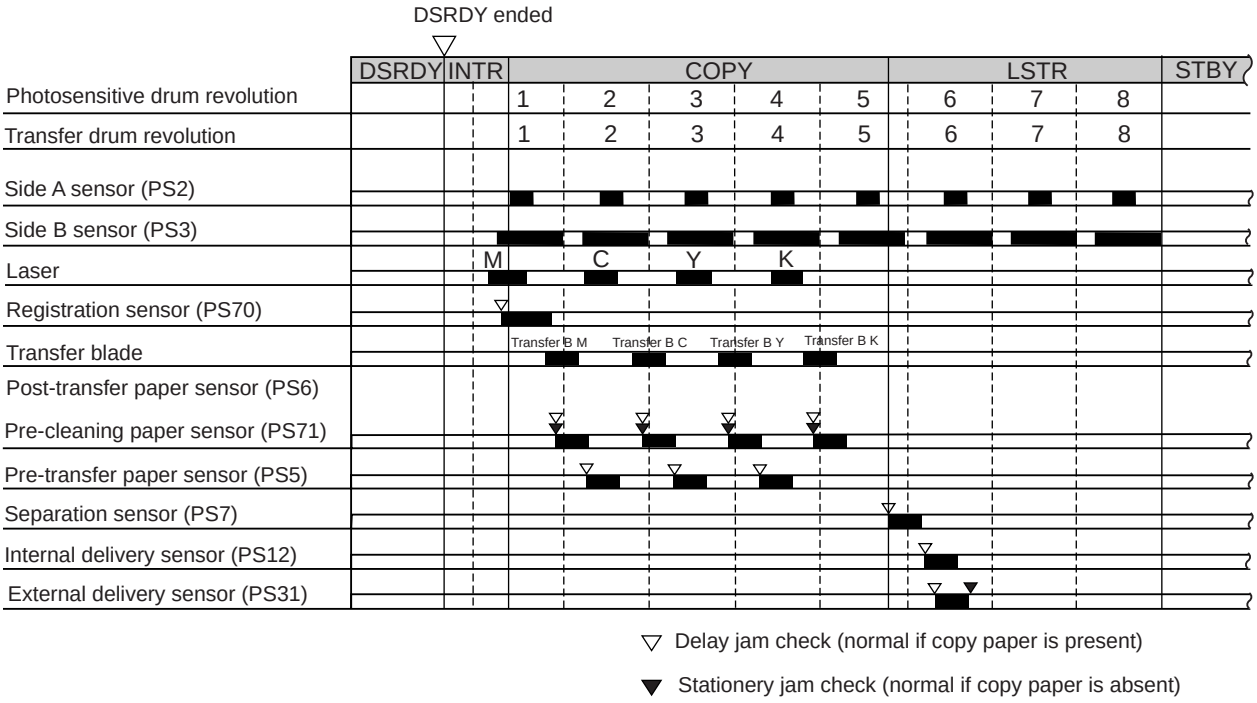

Figure 7-602

VII. DISASSEMBLY/ASSEMBLY (PICK-UP ASSEMBLY)

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (Do not insert a screwdriver or the like into the laser path.)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum.
   The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Pickup Assembly

1. Construction

Cassette 1/2/3 Pickup Assembly

[1] Pickup roller
[2] Feed roller
[3] Separation roller

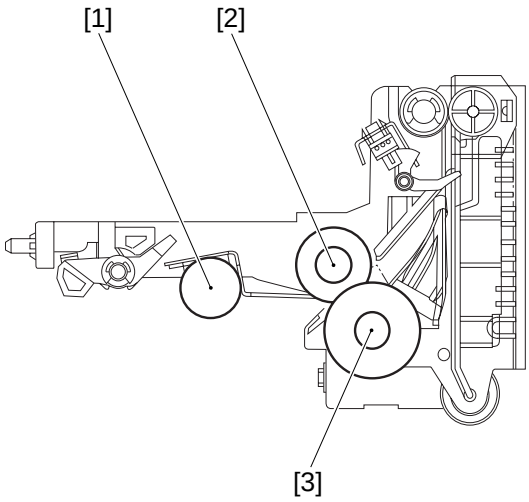

Figure 7-701

2. Removing the Cassette Pickup Assembly/Duplexing Pickup Assembly

The cassette pickup assembly may be removed regardless of the type of copier. The following cites the duplexing model.

1) Open the front cover (left, right).
2) Slide out the cassette/duplexing unit.
3) Remove the three screws [1], and detach the face cover [2].

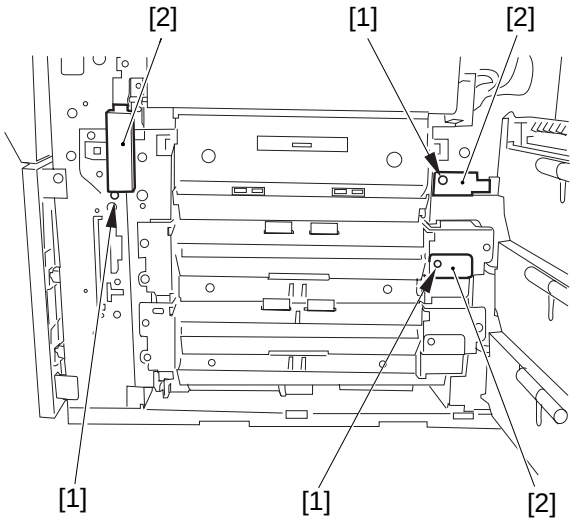

Figure 7-702

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4) Remove the three screws [3], and disconnect the two connectors [4]; then, detach the second pickup assembly [5].

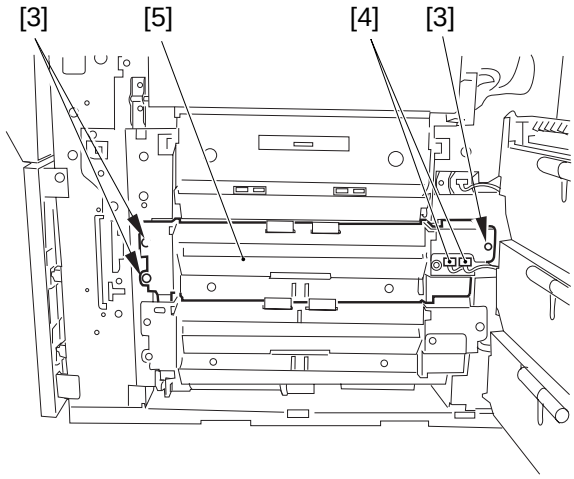

figure 7-703

5) Remove the four screws [6], and disconnect the connector [7]; then, slide out the duplexing pickup assembly [8] slowly to detach.

Caution:
Take care not to drop the pickup assembly when sliding it out.

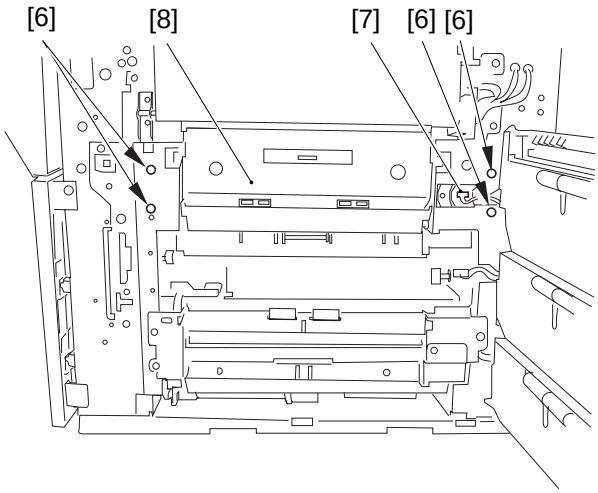

Figure 7-704

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3. Removing the Pickup Roller

1) Remove the cassette pickup assembly.
2) Remove the resin E-ring [1], and pull out the pickup roller [2] together with its collar.
3) Remove the one at the rear in the same way.

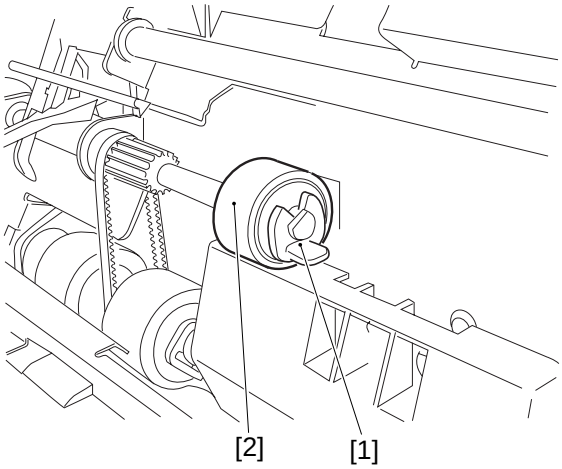

Figure 7-705

Caution:

a. When mounting the pickup roller [1] to the pickup assembly, be sure that the round marking [2] on its rubber portion is to the front of the copier. The pickup roller is identified by color (front and rear).
Use the gold-colored pickup roller for the front, and the silver-colored pickup roller for the rear.

b. Do not detach the rubber portion of the pickup roller from the collar.

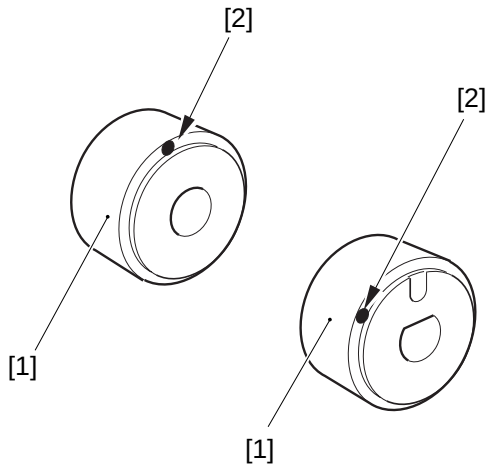

Figure 7-706

4. Removing the Cassette Pickup Assembly Feed Roller/Separation Roller

1) Remove the cassette 1 pickup assembly.
2) Remove the screw [1] and pickup cover [2].
3) Remove the resin E-ring [3].
4) Pull off the feed roller [4] from the shaft together with its belt.

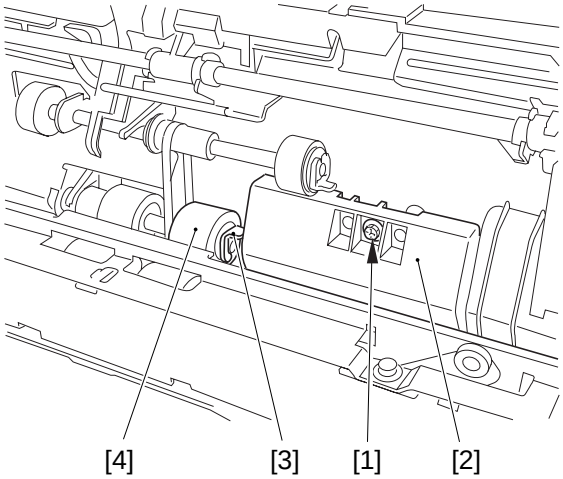

Figure 7-707

5) Remove the two screws [5], and detach the separation roller support mount [6].

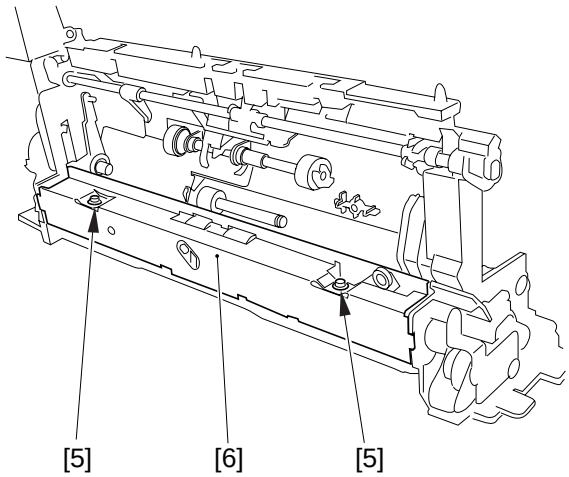

Figure 7-708

6) Remove the separation roller [7].

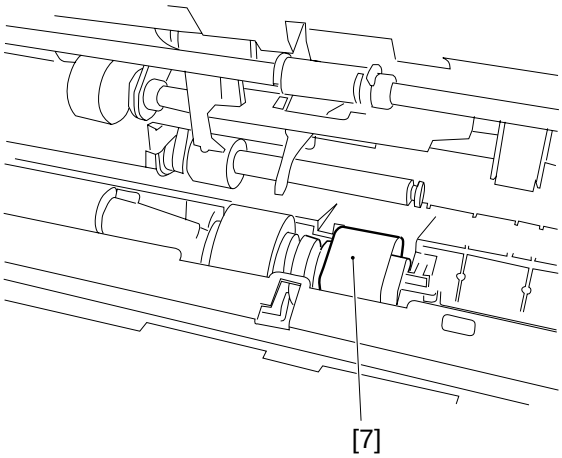

Figure 7-709

Caution:

a. When mounting the feed roller [1] to the pickup assembly, be sure that the gear [2] attached to the feed roller is at the front of the copier.
b. When mounting the separation roller [1] to the pickup assembly, be sure that the round marking [2] is at the front as shown.

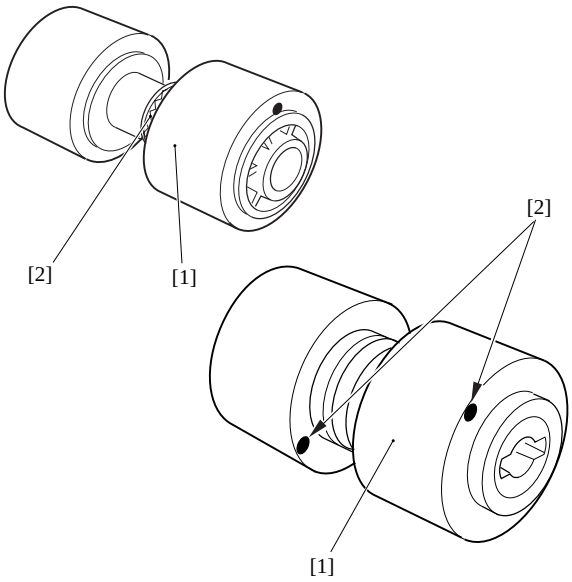

Figure 7-710

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5. Adjusting the Pressure of the Separation Roller

1) Remove the two screws [2] and detection lower guide [1].

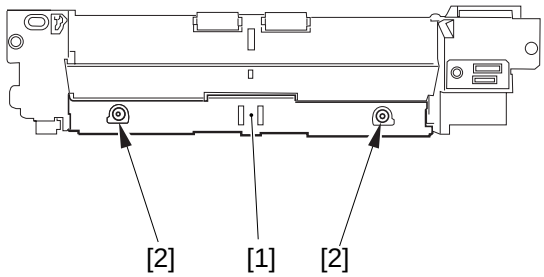

Figure 7-711

2) Remove the paper guide [3].

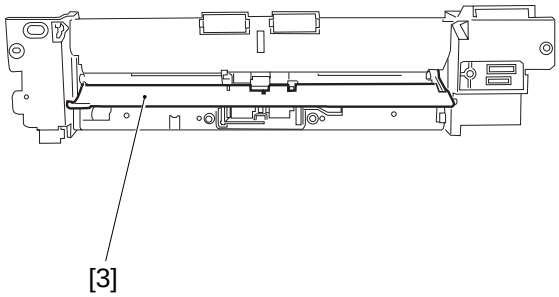

Figure 7-712

3) Remove the two screws [4], and detach the separation roller assembly [5].

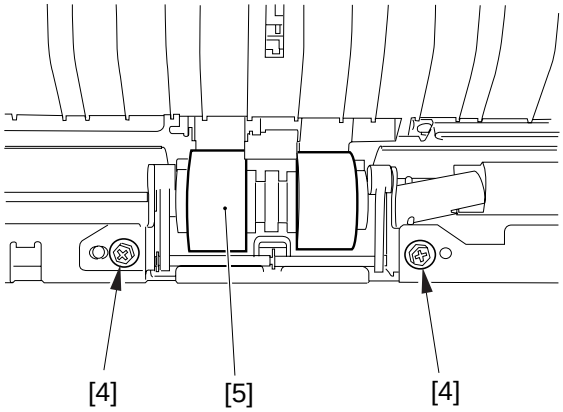

Figure 7-713

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4) If double feeding or pickup failure occurs during pickup operation, change the position of the pressure spring [6] of the separation roller.
   a. If double feeding occurs, move the hook of the spring in the direction of arrow A.
   b. If pickup failure occurs, move the hook of the spring in the director of arrow B.

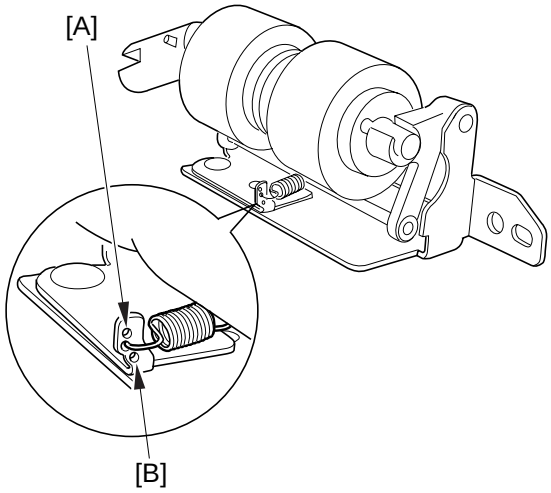

Figure 7-714

Caution:

a. Do not loosen the screw [1] used to secure the separation pressure spring plate in place.

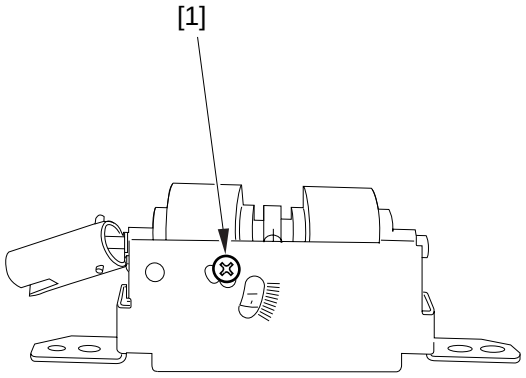

Figure 7-715

b. When mounting the separation roller unit, be sure that the releasing lever [1] is positioned as shown.

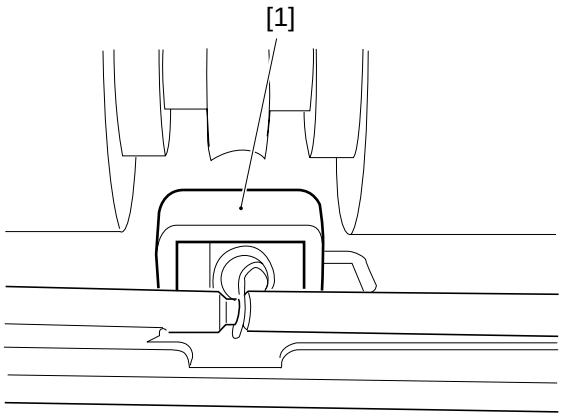

Figure 7-716

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6. Position of the Cassette Pickup Assembly and Pickup Roller Solenoid (SL7, SL8, SL9)

The position of the solenoid need not be adjusted. Mount it where the solenoid was initially found. (If you have to remove the solenoid, be sure to mark its position with a scriber in advance.)

7. Adjusting the Left/Right Registration of the Cassette

1) Remove the cassette that needs to be adjusted.
2) Loosen the screw [1].
3) Turn the adjusting screw [2], and adjust the position of the left/right registration adjusting plate so that the left/right registration is 2.0 ±1.5 mm with reference to the image. (A full turn will be about 0.7 mm.)

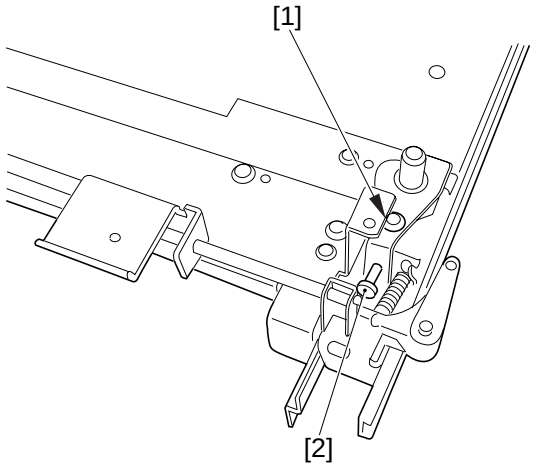

Figure 7-717

- To increase the registration at the front, turn the adjusting screw counterclockwise.
- To increase the registration at the rear, turn the adjusting screw clockwise.

4) After the above adjustment, be sure to perform the steps under “Registering the Paper Width Basic Value.”

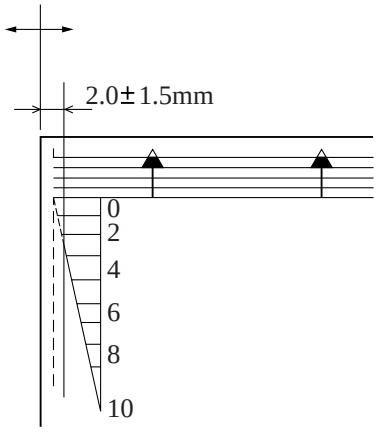

Figure 7-718

8. Removing the Duplexing Unit Feed Roller

1) Remove the duplexing pickup assembly.
2) Remove the resin E-ring [1].
3) Remove the feed roller [2].

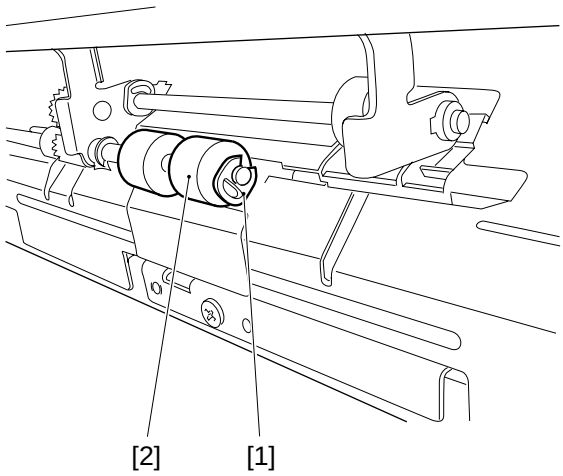

Figure 7-719

9. Removing the Duplex Unit Separation Roller

1) Remove the duplexing pickup assembly.
2) Remove the screw [1], and remove the face plate [2].

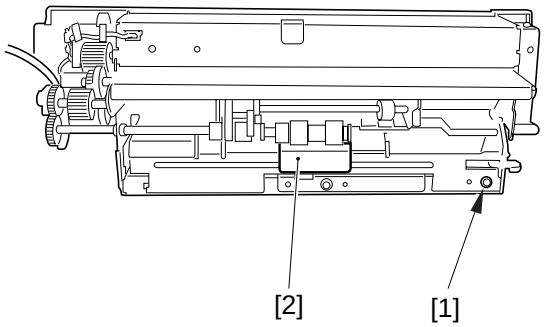

Figure 7-720

3) Remove the screw [3], and remove the separation roller assembly [4].

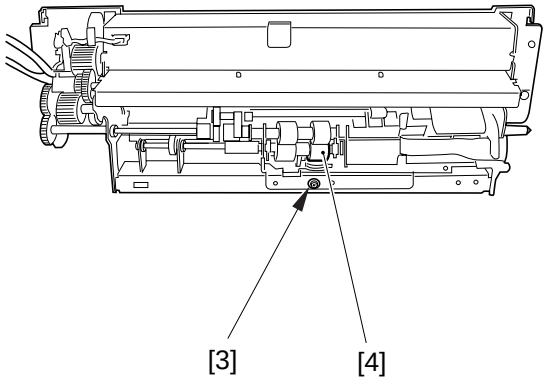

Figure 7-721

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4) Remove the resin E-ring [5], and detach the separation roller [6].

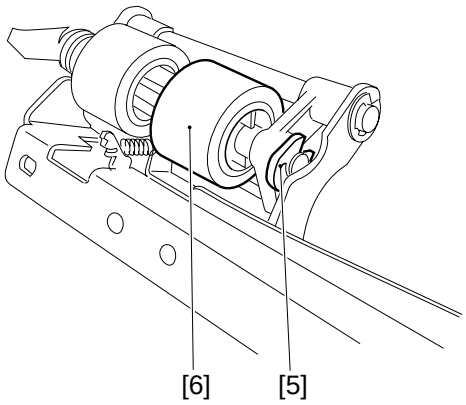

Figure 7-722

Caution:

a. When attaching the feed roller [1], be sure that the round marking [2] is at the front.
b. When mounting the separation roller [3], be sure that the round marking [4] is at the rear.

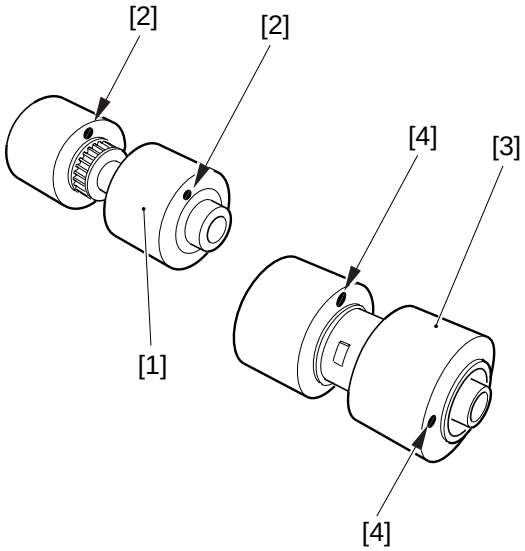

Figure 7-723

10. Removing the Duplexing Unit Pickup Roller

1) Remove the duplexing pickup assembly.
2) Remove the screw [1], and detach the positioning pin [2]; then, detach the paper guide [3].

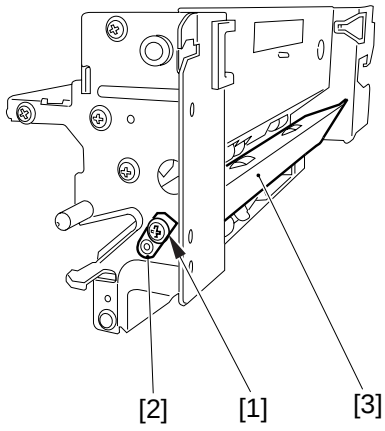

Figure 7-724

3) Loosen the screw [4] on the paper guide.

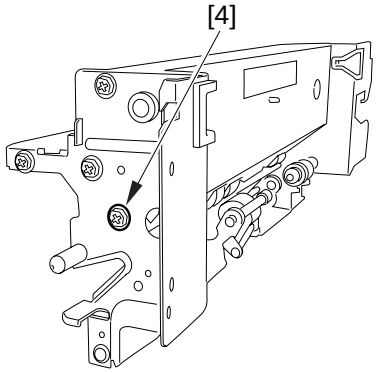

Figure 7-725

4) Remove the two screws [5], and remove the paper guide upper [6].

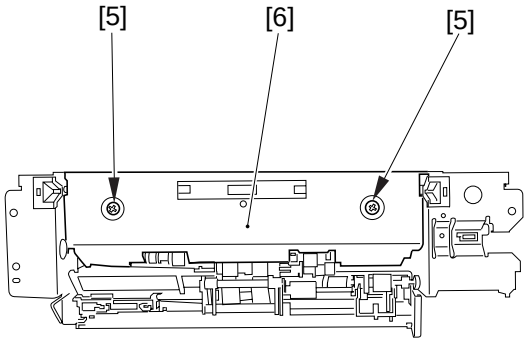

Figure 7-726

5) Remove the resin E-ring [7], and remove the pickup roller [8].

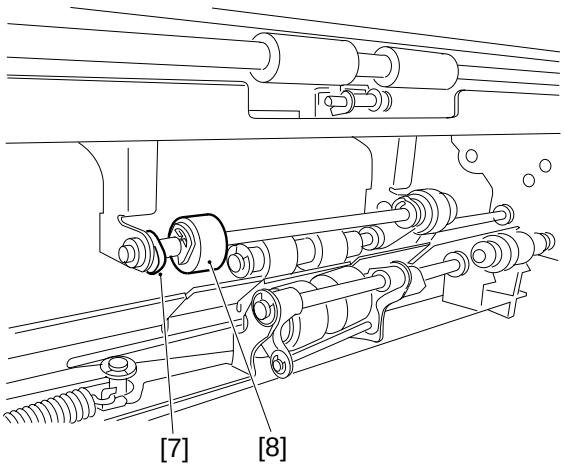

Figure 7-727

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Caution:

a. When mounting the pickup roller [1] to the pickup assembly, be sure that the round marking [2] on the rubber portion is at the front. The pickup roller is identified by color (front and rear):
   Use the gold-colored pickup roller for the front.
   Use the silver-colored pickup roll for the rear.
b. Do not detach the rubber portion of the pickup roller from the collar.

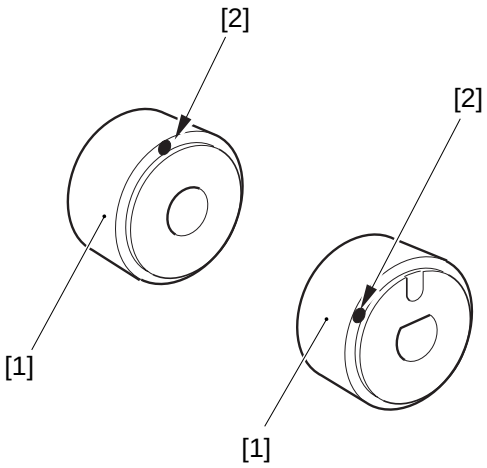

Figure 7-728

B. Multifeeder

1. Removing the Multifeeder Assembly

1) Remove the right middle cover, right front cover, right rear cover, right rear face cover, and right front face cover.
2) Disconnect the two connectors [1], and remove the four screws [2]; then, detach the multifeeder assembly [3].

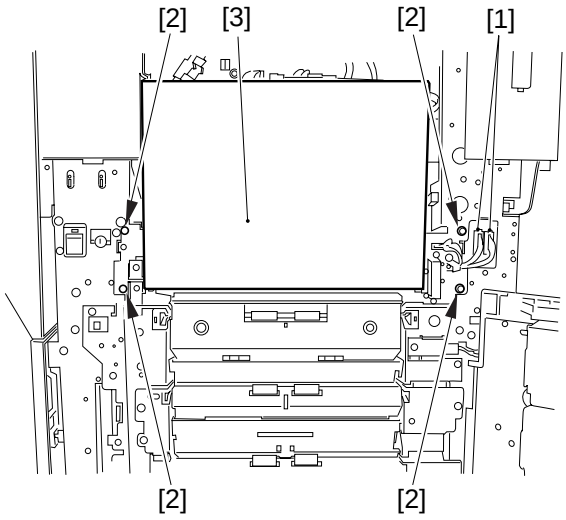

Figure 7-729

2. Removing the Pickup Roller, Feed Roller, and Separation Roller

1) Remove the right middle cover.
2) Remove the two screws [1], and detach the pickup roller cover [2].

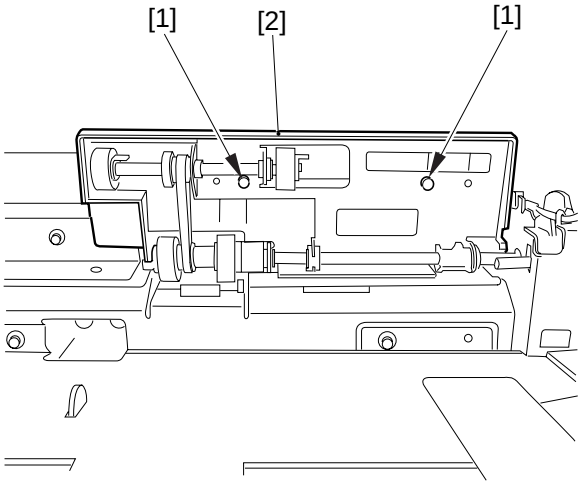

Figure 7-730

3) Remove the resin E-ring [3], and pull out the pickup roller [4] slowly (both front and rear).

Caution:
The pickup roller is secured in position to the shaft with a parallel pin. Take good care not to drop the pin when removing or mounting it.

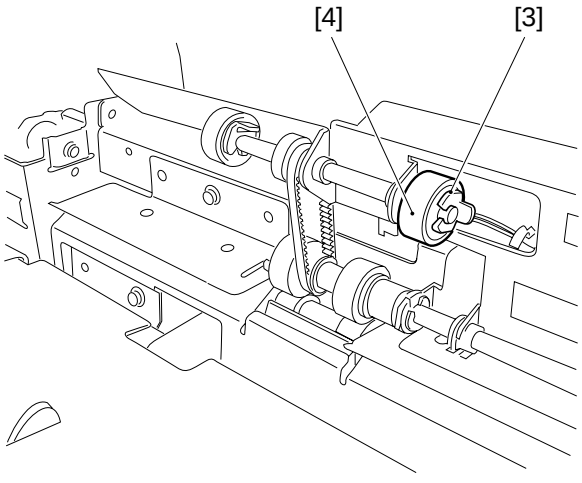

Figure 7-731

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4) Remove the screw [5], and detach the upper paper guide plate [6].

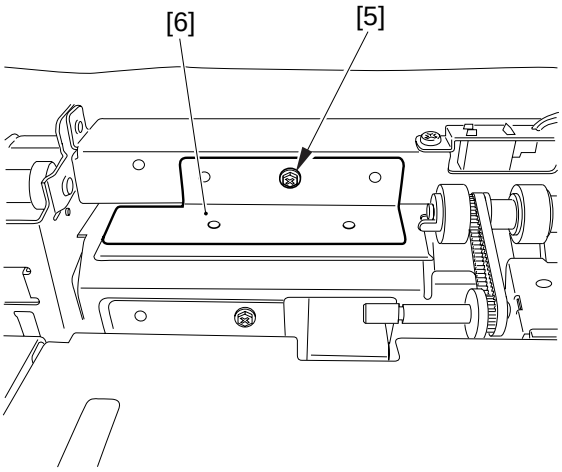

Figure 6-732

5) Remove the E-ring [7] and the bushing [8] of the pickup roller shaft.

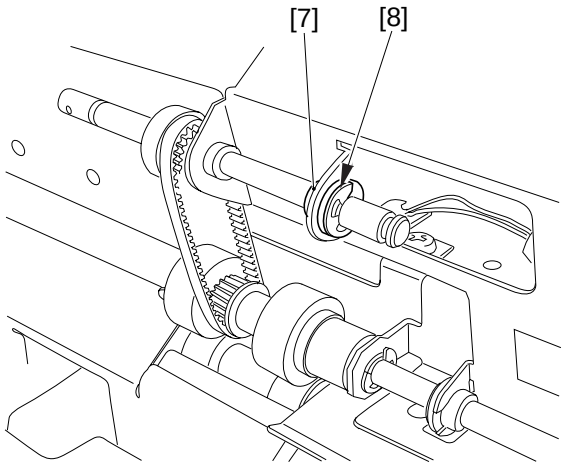

Figure 7-733

6) Remove the resin E-ring [9], and detach the feed roller [10] and the pickup roller shaft at the same time.

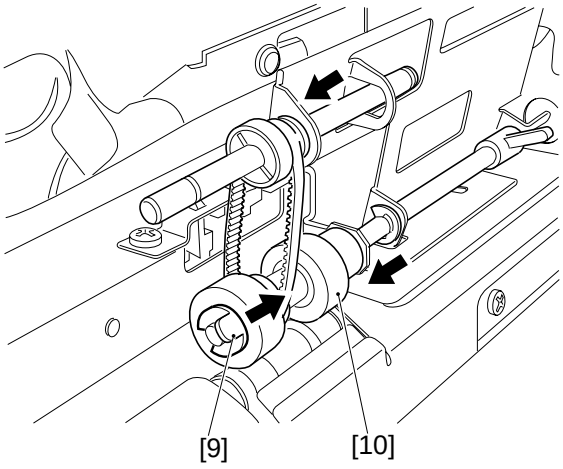

Figure 7-734

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7) Remove the two screws [11], and detach the lower paper guide plate [12].

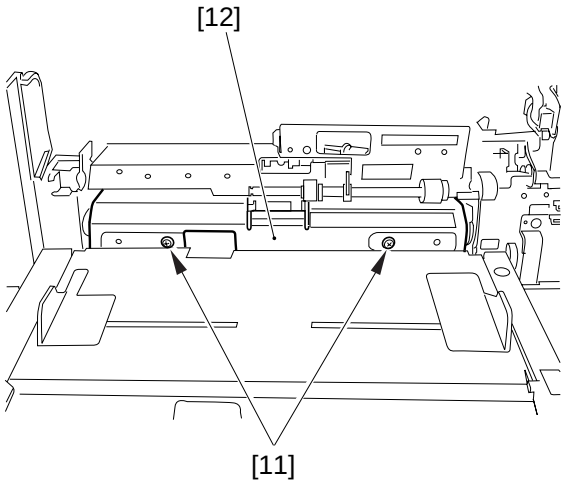

Figure 7-735

8) Remove the separation roller [13].

Caution:

The separation roller is secured in position to the shaft with parallel pin. Take good care not to drop the pin when removing or mounting it.

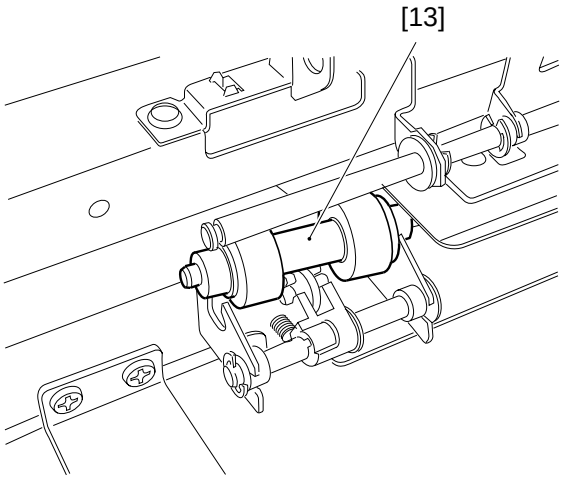

Figure 7-736

Reference:

a. Mount the pickup roller [1] so that the round marking is at the rear.
b. Mount the feed roller [2] so that the round marking is at the rear.
c. Mount the separation roller [3] so that the round marking is at the rear.

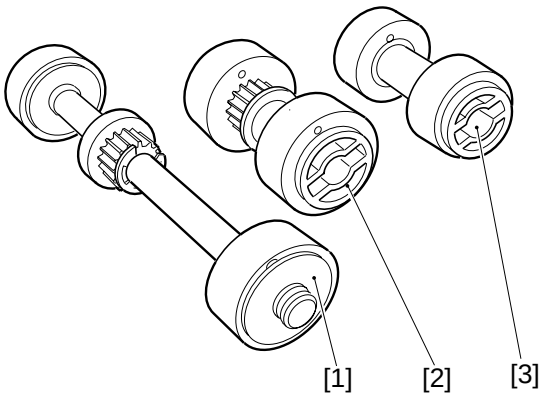

Figure 7-737

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3. Left/Right Registration

If left/right registration is wrong when pickup is from the multifeeder, adjust the screw [1] to adjust the position of the tray.

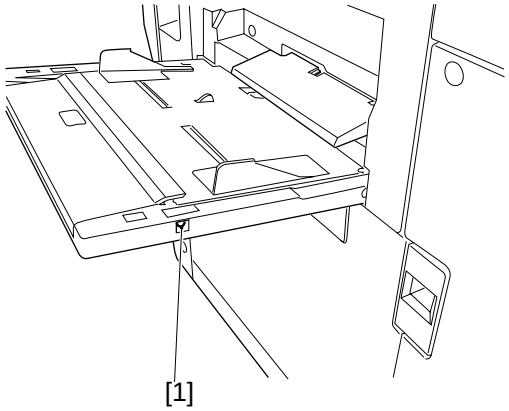

Figure 7-738

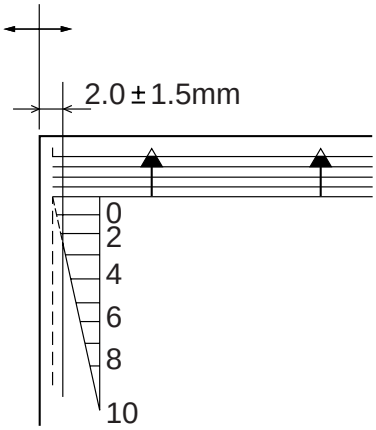

Figure 7-739

4. Attaching the Timing Belt for the Multifeeder Assembly

Keep the rack plate [1] of the multifeeder closed.

Move the slide volume [2] in the direction of the arrow, and attach the timing belt [3].

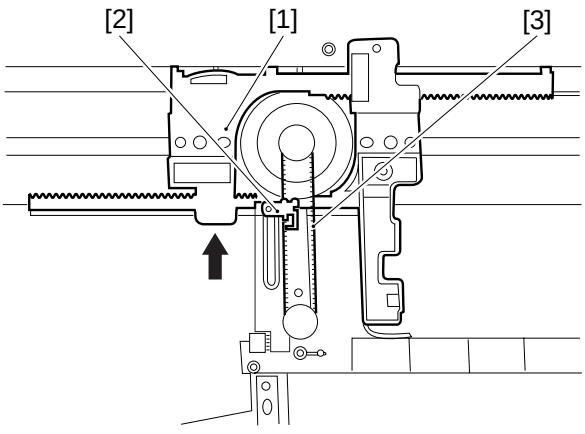

Figure 7-740

5. Position of the Multifeeder Pickup Solenoid

The position of the solenoid need not be adjusted, but be sure to mount it where it initial was (as upon shipment from the factory). To do so, be sure to mark the position of the solenoid with a scribe before removing it.

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C. Duplexing Unit

1. Removing the Duplexing

1) Remove the right center cover, right front cover, face cover, and cassette switch cover.
2) Open the waste toner box cover.
3) Slide out the duplexing unit.
4) Remove the two screws [1], and remove the two stopper plates [2].
5) Remove the duplexing unit.

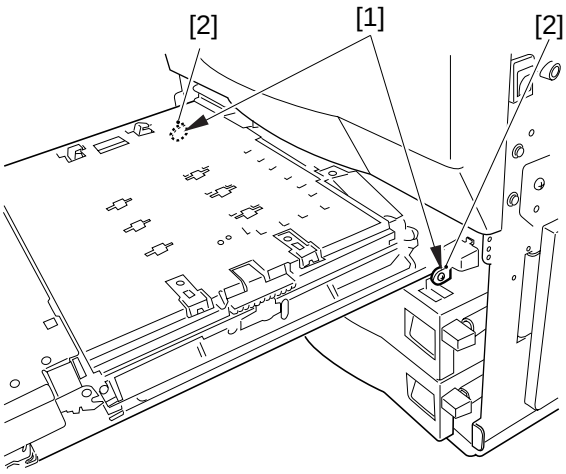

Figure 7-741

2. Removing the Feed Roller

1) Slide out the duplexing unit.
2) Detach the paper retaining guide plate [1] by squeezing it slightly.

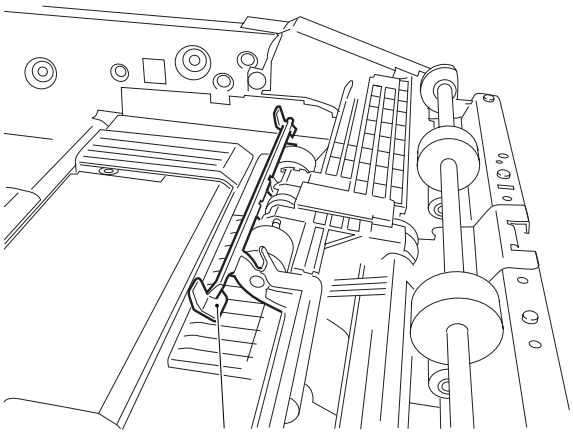

Figure 7-742

3) Remove the two resin E-rings [2], and detach the feed roller [3] from the feed roller shaft.

Caution:
The feed roller is identified by color (front and rear):
Use the white feed roller for the front.
Use the black feed roller for the rear.

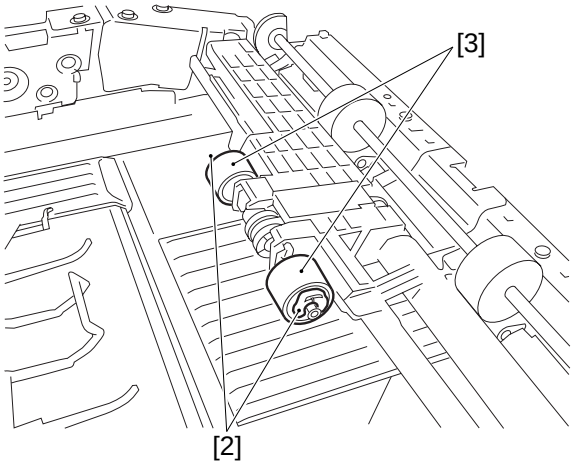

Figure 7-743

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3. Remove the Duplexing Feed Assembly

1) Remove the duplexing unit.
2) Remove the four screws [1], and detach the duplexing cover [2].

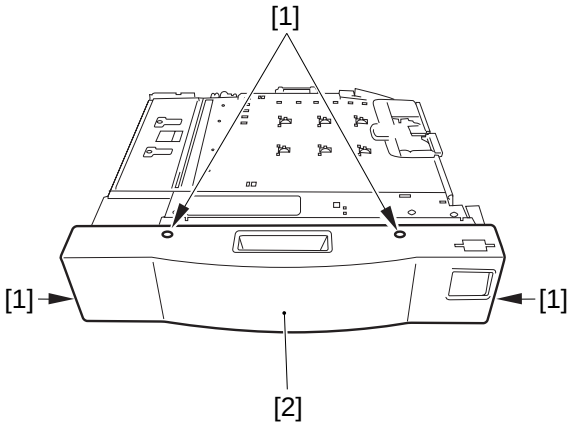

Figure 7-744

3) Remove the two screws [3], and detach the duplexing stay.

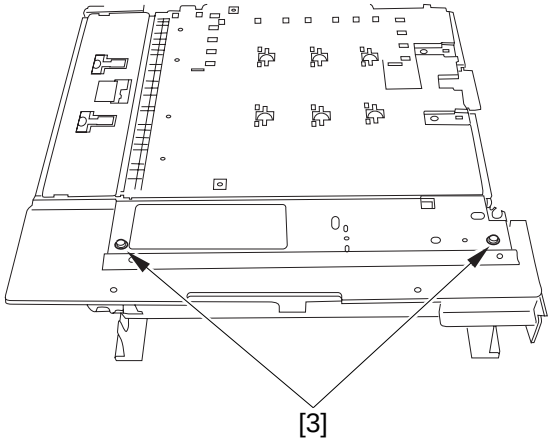

Figure 7-745

4) Disconnect the connector [4].

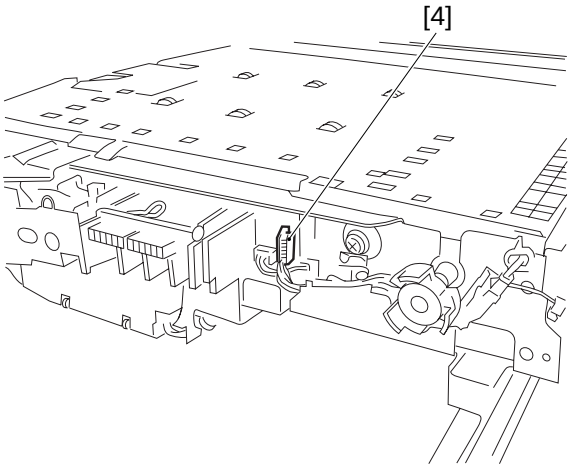

Figure 7-746

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5) Loosen the strap [5] fitted in the feed upper guide to free it from the boss and detach.

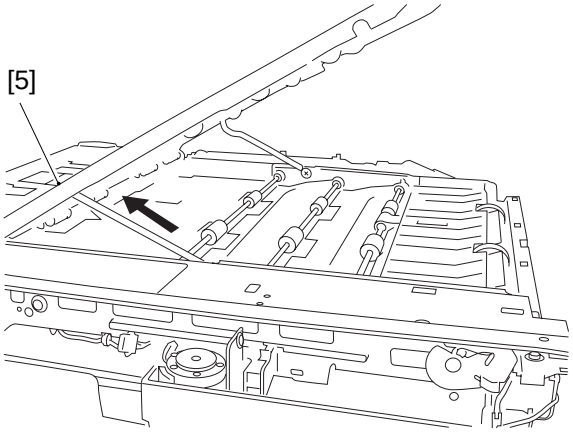

Figure 7-747

6) Open the duplexing feed cover [6], and detach it from the bushing at the rear.

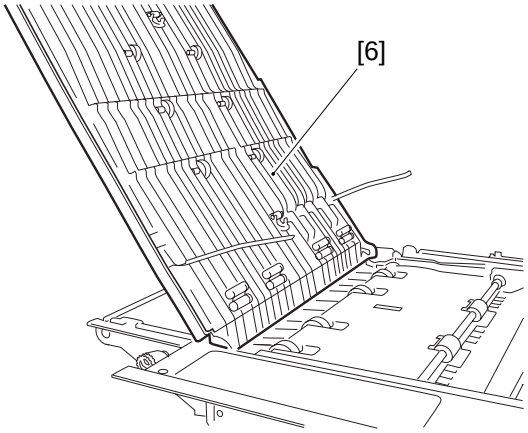

Figure 7-748

7) Remove the E-ring [7], and remove the gear [8] (pay attention to the pin) and the belt (orange) [9].

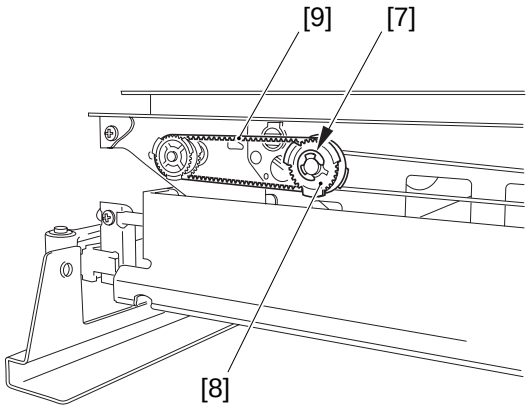

Figure 7-749

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8) Loosen the screw on the tension plate [10]. At this time, take care not to lose the pin.

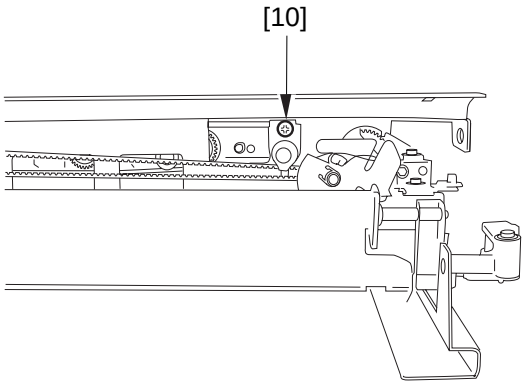

Figure 7-750

9) Remove the gear [11] (pay attention to the pin) and the belt (black) [12].

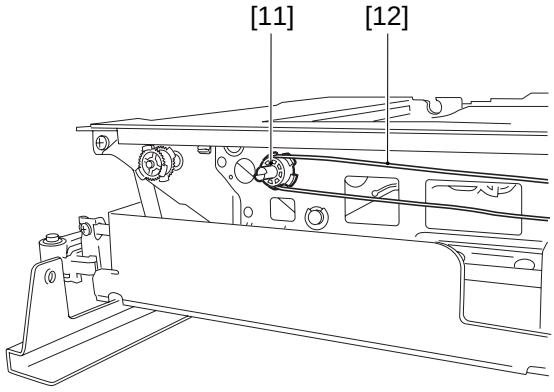

Figure 7-751

10) Remove the E-ring [13] at the rear, and shift the bushing [14].

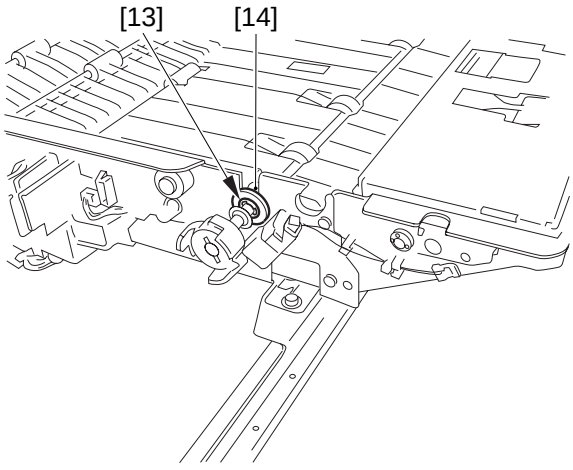

Figure 7-752

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11) Remove the guide plate [15] from the guide shaft of the duplexing feed assembly (both front and rear).

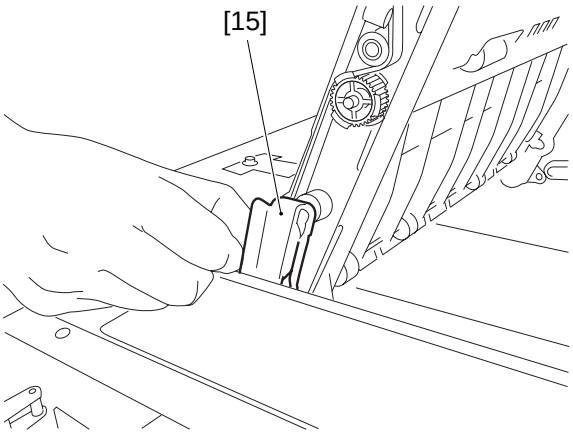

Figure 7-753

12) Lift the rear of the duplexing feed assembly [16], and pull it off.

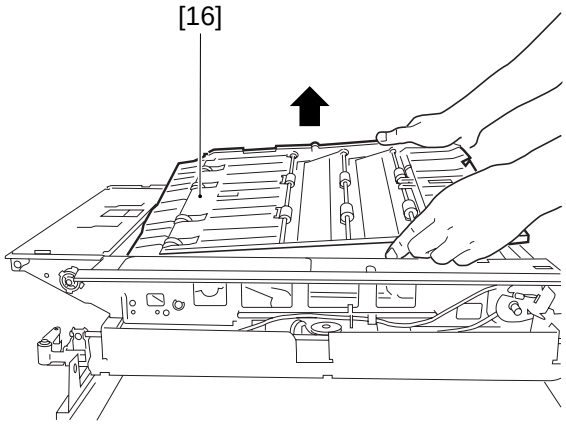

Figure 7-754

4. Adjusting the Left/Right Registration of the Duplexing Unit

1) Slide out the duplexing, and open the duplexing feeding assembly.
2) Loosen the two screws [1].

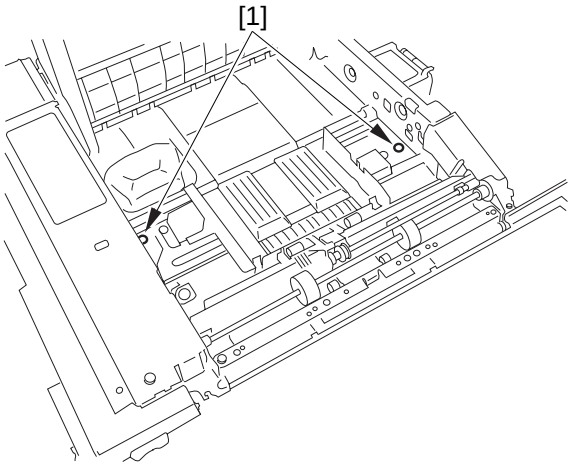

Figure 7-755

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3) Adjust the left/right registration adjusting plate so that the horizontal registration is 2.0± 15. mm in reference to the image.

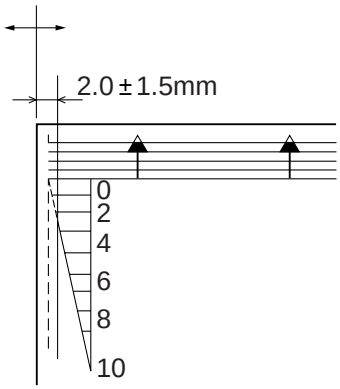

Figure 7-756

5. Adjusting the Position of the Paper Jogging Guide Sensor (PS40)

1) Select A4R or LTRR, and complete copying on the first side of a double-sided copy.
2) Slide out the duplexing unit.
3) Measure the distance L of the paper jogging guide plate [1].
   A4R: L = 210 ±0.3 mm
   LTRR: L = 216 ±0.3 mm
4) If the distance is not as indicated, remove the duplexing cover.
5) Loosen the screw [2].

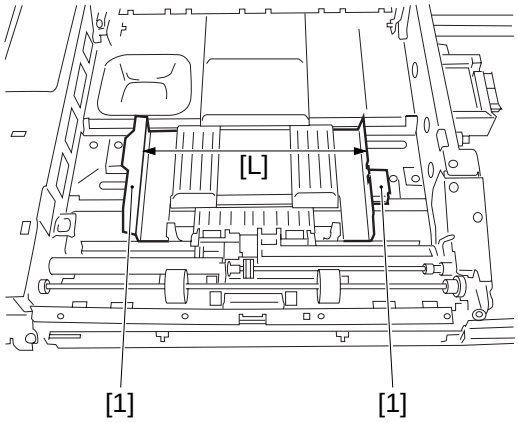

Figure 7-757

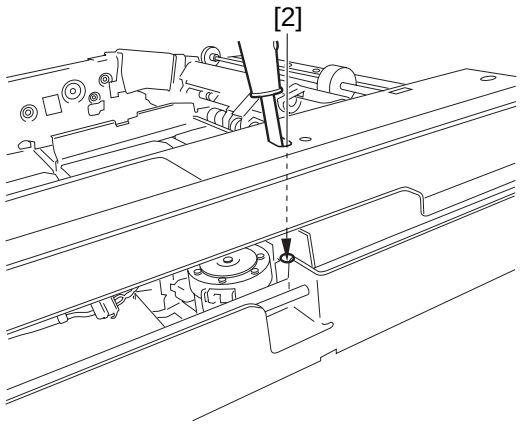

Figure 7-758

6) Using the screw [3], adjust the position of the paper jogging sensor.

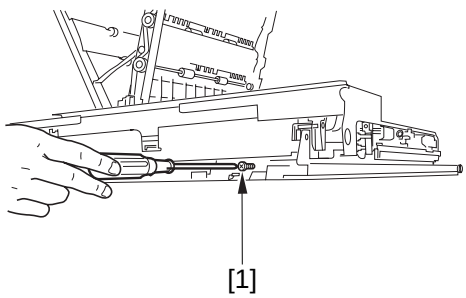

Figure 7-759

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6. Assembling the Paper Jogging Guide Plate Drive Assembly

Keep the paper jogging guide plate closed.

At this time, assemble the parts so that the rack and the pinion are as shown.

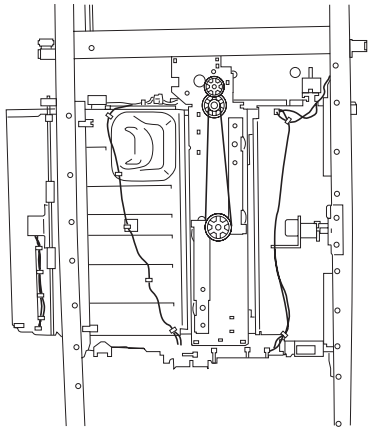

Figure 7-760

7. Position of the Stopper Plate Solenoid

1) Keep the steel core [1] of the solenoid pulled to the solenoid body.
2) Rotate the shutter [2] so that the distance L1 in the figure is 1.0 ±0.2 mm; then, mount the stopper plate solenoid.

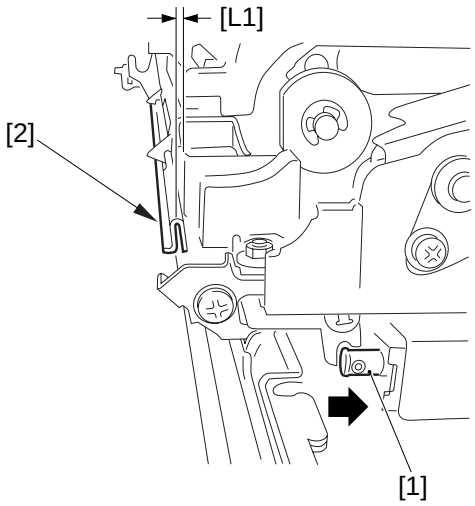

Figure 7-761

8. Position of the Duplexing Paper Feed Roller Solenoid

With the steel core of the solenoid pulled to the solenoid body, mount the duplexing feed roller solenoid so that the distance L2 between the top of the feed roller and the holding tray is 49 ±0.5 mm as shown.

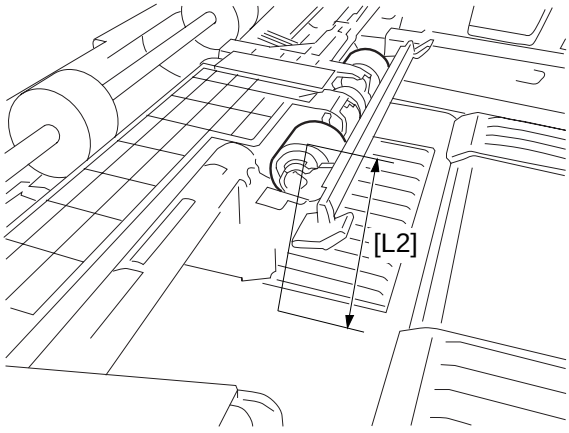

Figure 7-762

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9. Position of the Stacking Guide Solenoid

Mount the stacking guide solenoid in the center of the long hole [1] in the solenoid base. (Be sure to mark the position of the solenoid with a scriber before removing it.)

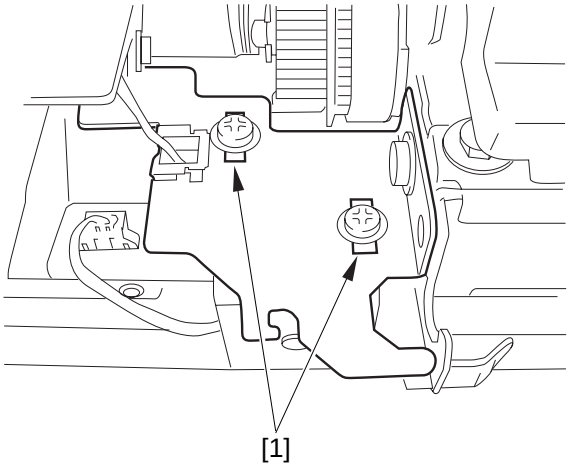

Figure 7-763

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D. Pickup Motor Drive Assembly

1. Removing the Cassette Pickup Drive Assembly/Re-Pickup Drive Assembly

The cassette pickup drive assembly and the re-pickup drive assembly may be removed in the same way. The following cites the re-pickup drive assembly:

1) Remove the cassette pickup assembly or the duplexing pickup assembly.
2) Remove the rear cover.
3) Disconnect the connector [1], and remove the three screws [2]; then, remove the re-pickup drive assembly [3].

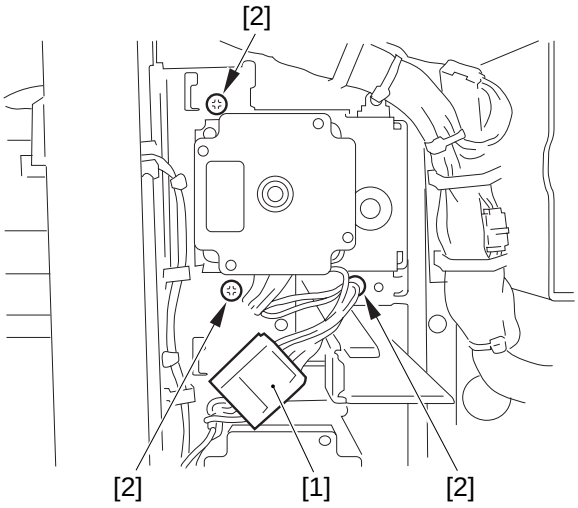

Figure 7-764

Caution:
When removing the bottommost cassette pickup assembly, remove the two screws [4] and the pickup driver PCB unit [5] in advance.

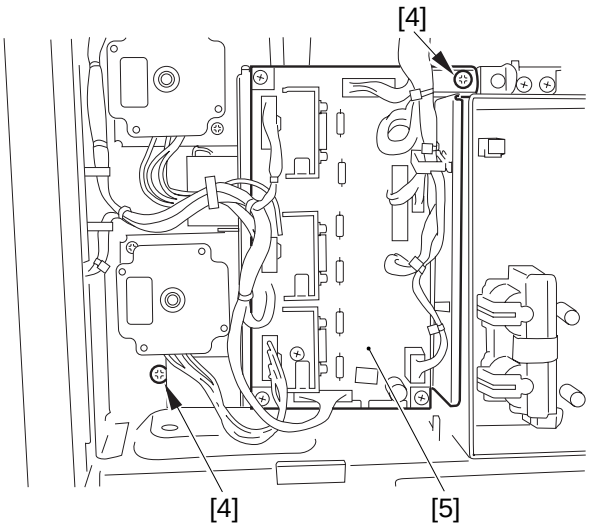

Figure 7-765

2. Removing the Duplexing Motor

1) Slide out the duplexing unit.
2) Remove the rear cover.
3) Open the CPU PCB.
4) Remove the three screws [1], and disconnect the two connectors [2]; then, detach the duplexing motor [3].

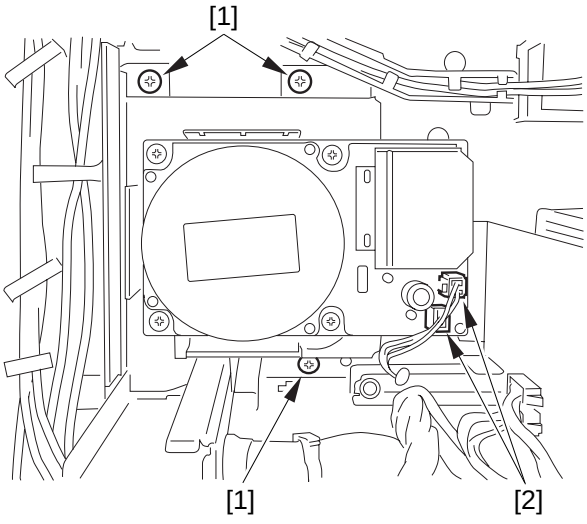

Figure 7-766

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VIII. DISASSEMBLY/ASSEMBLY (TRANSFER ASSEMBLY/DELIVERY ASSEMBLY)

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (Do not insert a screwdriver or the like into the laser path.)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum.
   The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Removing the Transfer Drum Assembly/Transfer Drum Frame

1. Removing the Transfer Drum

Caution:

The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum.
The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mid. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

1) Open the hopper, and remove the transfer drum frame cover; then, slide out the transfer drum frame.

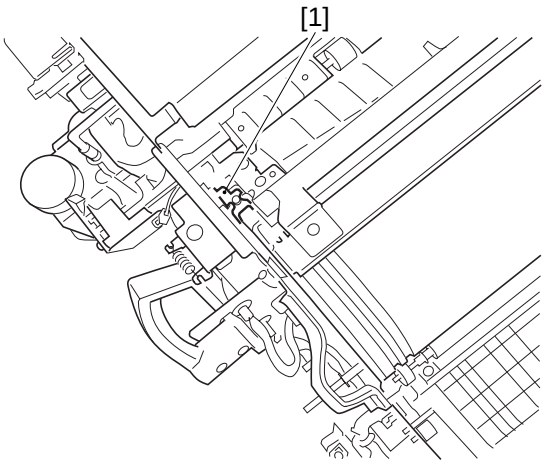

Figure 7-801

2) Disconnect the separation sensor connector [1], three transfer drum connectors [2], and polishing roller motor connector [3].

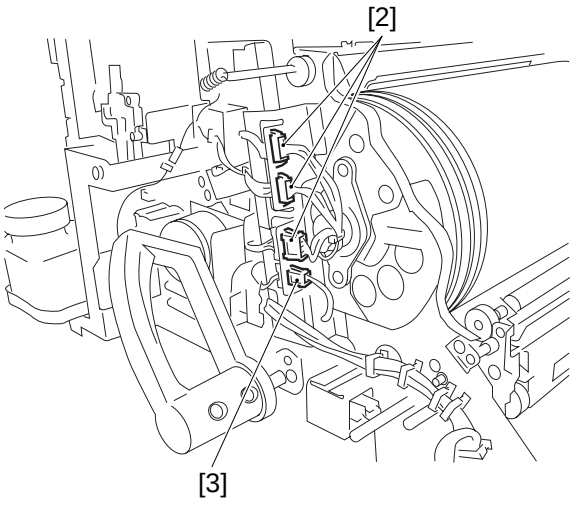

Figure 7-802

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3) Holding the rear of the transfer drum by your right hand, grasp the handle of the transfer drum with your left hand, and lift it.

Caution:
Take care not to let the attraction roller come into contact with the transfer drum sheet.

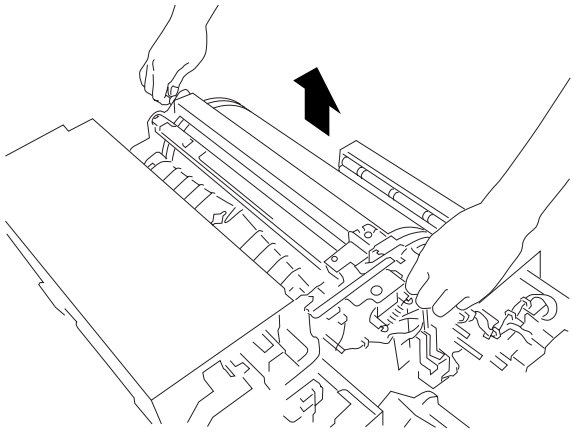

Figure 7-803

4) Place the transfer drum assembly as shown.

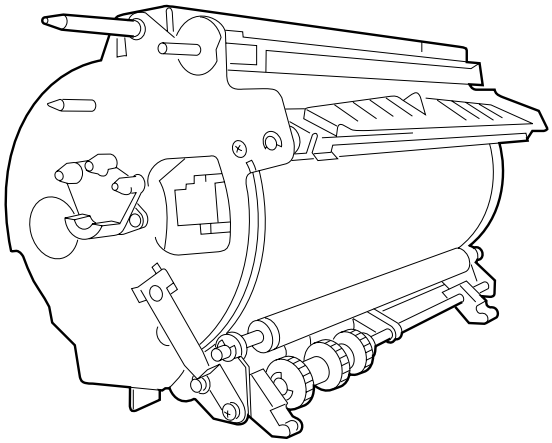

Figure 7-804

2. Points to Note When Handling the Transfer Drum

After placing the transfer drum on the transfer drum frame, check to make sure that it is as shown.

Correct

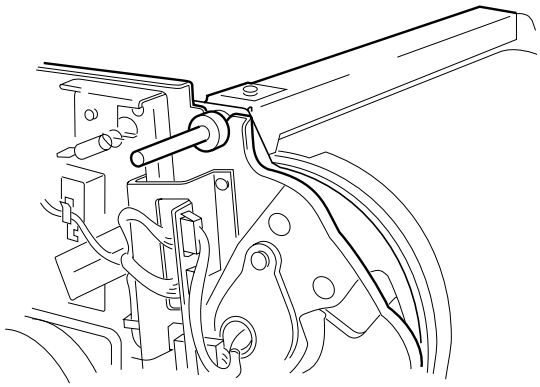

Figure 7-805

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Wrong

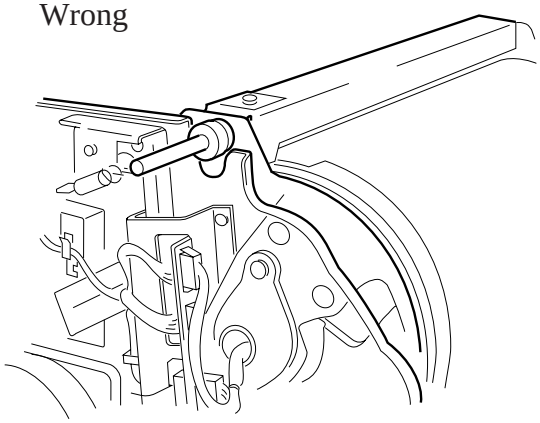

Figure 7-806

If you have replaced the transfer drum, be sure to perform the following in service mode (ADJUST>FED-ADJ; p. 13-2):

1. Attraction timing adjustment (ATT-T-A, ATT-A-B)
2. Image leading edge margin adjustment (RG-XA, RG-XB, RG-Y)
3. Attraction position adjustment (TR-DELAY_A, TR-DELAY_B)
4. Image rear end adjustment (TR-END-A, TR-END-B)

3. Removing the Transfer Drum Frame

1) Slide out the transfer drum frame.
2) Remove the fixing assembly.
3) Remove the transfer drum.
4) Grasp the handles of the transfer drum frame, and detach it.

Caution:
The transfer drum frame weighs about 10 kg. Take adequate care.

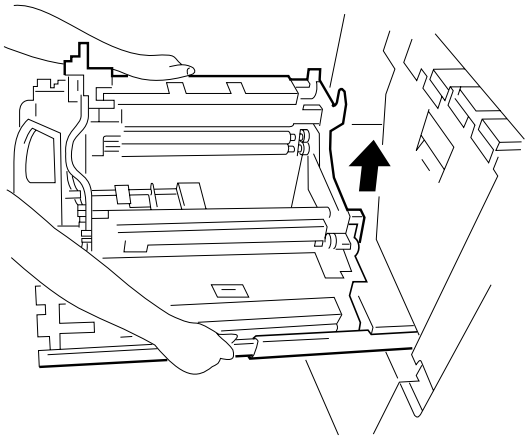

Figure 7-807

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B. No. 1 Feeding Assembly

1. Construction

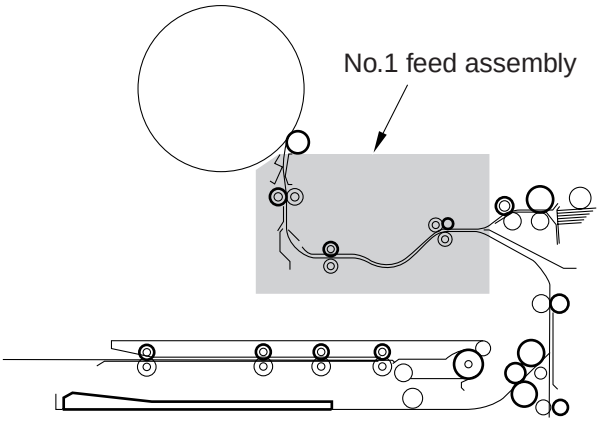

Figure 7-808

2. Removing the Horizontal Path Assembly

1) Slide out the transfer frame.
2) Remove the screw [1], and disconnect the two connectors [2]; then, detach the solenoid unit [3].

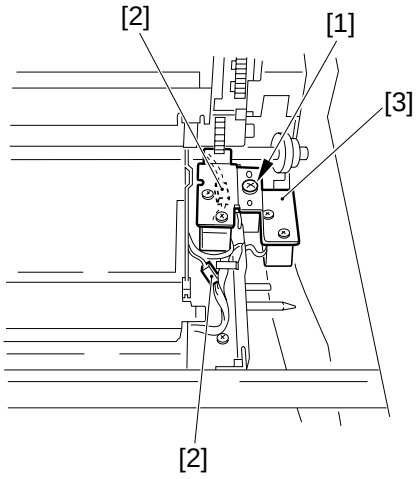

Figure 7-809

3) Disconnect the connector [4], and remove the two screws [5].
4) Shift the horizontal path assembly [6] slightly to the right; then, detach it by pulling carefully to the front.

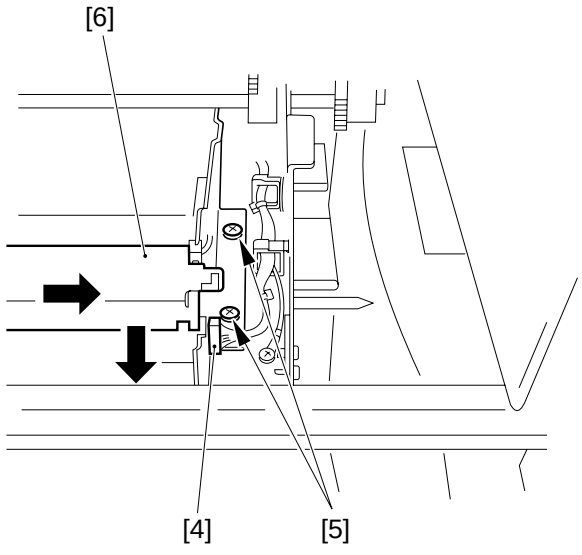

Figure 7-810

3. Removing the Attraction Roller Unit

1) Slide out the transfer frame, and remove the transfer cover and the transfer frame cover.
2) Remove the screw [1], and disconnect the two connectors [2]; then, remove the solenoid unit [3].

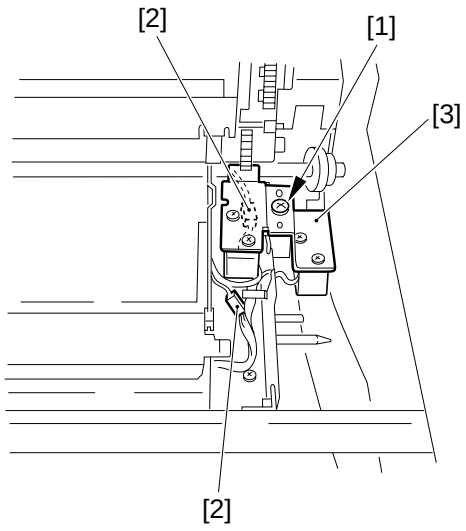

Figure 7-811

3) Remove the screw [4], detach the positioning pin [5].

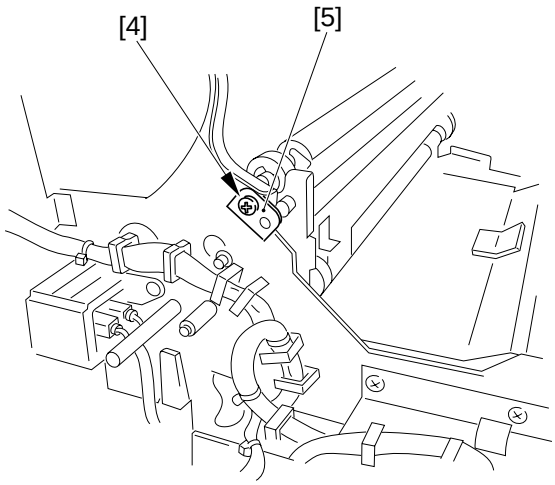

Figure 7-812

4) Move the attraction roller unit [6] to the front.

Caution:
Take care so that the attraction roller unit or your fingers will not come into contact with the transfer sheet.

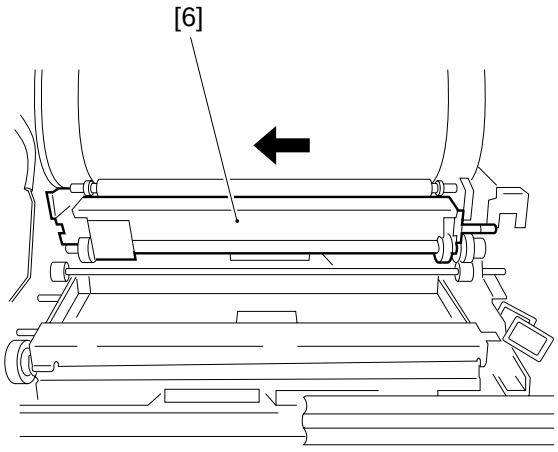

Figure 7-813

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5) Put the rear positioning shaft (left) [7] under the gear [8].

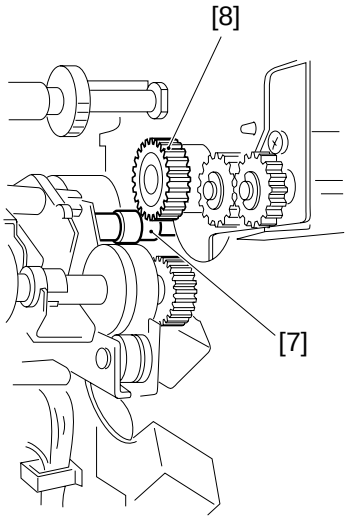

Figure 7-814

6) Put the front positioning shaft [9] through the large hole to detach the attraction roll unit.

Caution:
Do not insert the transfer drum frame without fitting the solenoid unit removed in step 2) back in to avoid damage. When you have detached the attraction roll unit, be sure to mount it back to its initial position with its screw.

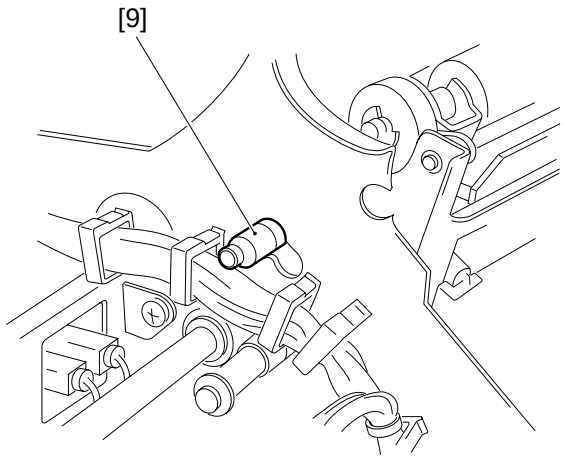

Figure 7-815

4. Removing the Scraper of the Attraction Roller

1) Remove the two TP screws [1], and detach the toner receptacle [2].

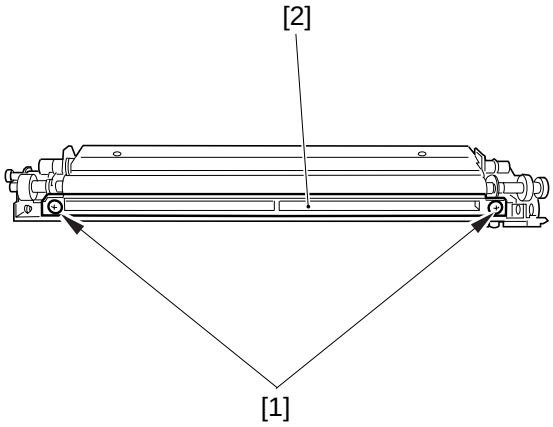

Figure 7-816

2) Remove the two screws [3], and detach the scraper [4].

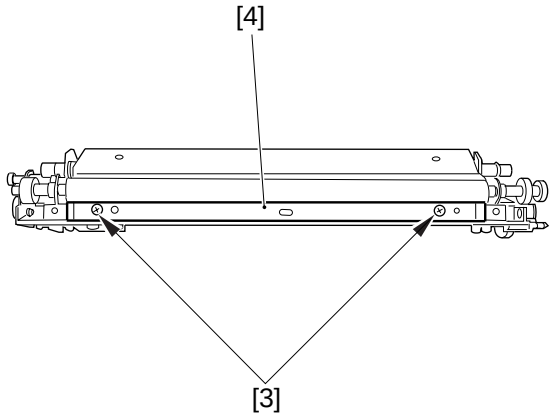

Figure 7-817

5. Removing the Attraction Roller

1) Remove the attraction roller unit.
2) Remove the scraper of the attraction roller.
3) Remove the resin fixing ring [1] at the front, and detach the attraction roller [2].

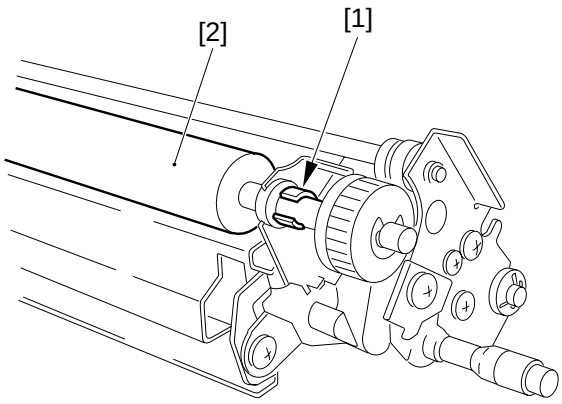

Figure 7-818

6. Replacing the Attraction Roller Unit Spring Clutch Assembly

1) Remove the attraction roller unit.
2) Using a hex screw, loosen the hex-hole screw [1], and remove the spring clutch assembly [2] from the registration roller assembly rear.
3) Clean the shaft to which the spring clutch was mounted.
4) Loosen the hex-hole screw of the new spring clutch assembly.
5) Mount the new spring clutch assembly to the shaft.
   While doing so, keep the spring clutch assembly butted against the E-ring side.
   When loosening the hex-hole screw, be sure that the screw and the D-cut of the shaft are perpendicular.

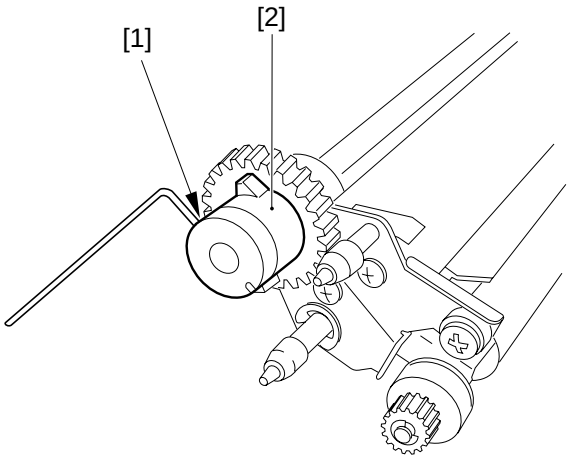

Figure 7-819

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6) Apply several drops of lubricating oil in the gap [5] between the spring clutch gear [3] and the control ring [4].
7) After applying oil, rotate the gear of the spring clutch several times so that the oil is spread through the gap between the gear and the control ring; then, apply several more drops of oil.
8) Repeat steps 6) and 7) so that as many as ten drops of oil have been applied in total.
9) Wipe off any oil that has spread onto the control ring.

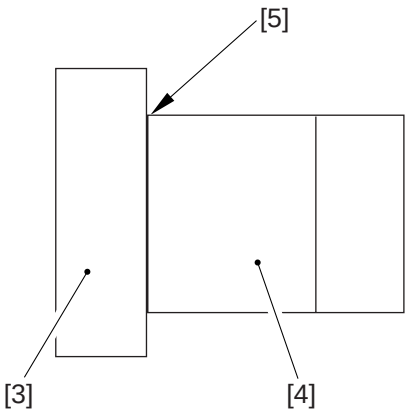
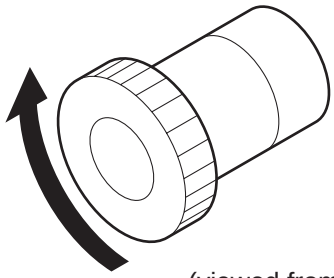


Figure 7-820



(viewed from the front)

Figure 7-821

7. Removing the Registration Roller

1) Remove the transfer drum and the fixing assembly; then, detach the fixing assembly frame from the copier.
2) Remove the attraction roll unit.
3) Disconnect the connector [1], remove the screw [2], and remove the grip ring [3]; then, detach the registration clutch [4].

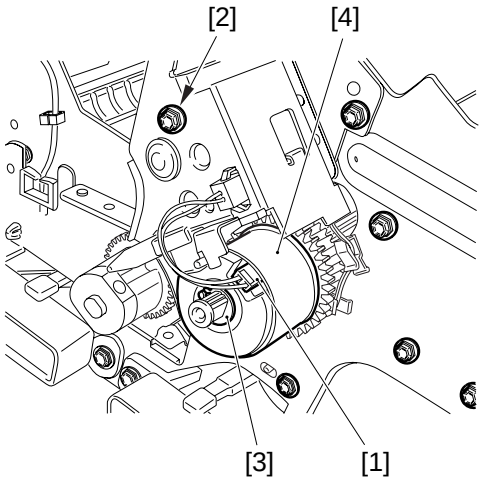


Figure 7-822

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4) Remove the three screws [5], and detach the attraction roller drive gear unit [6].

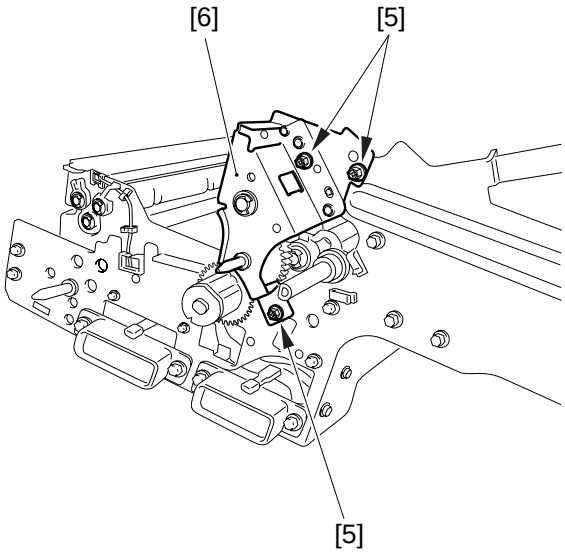

Figure 7-823

5) Remove the roller pressure spring (rear) [7].

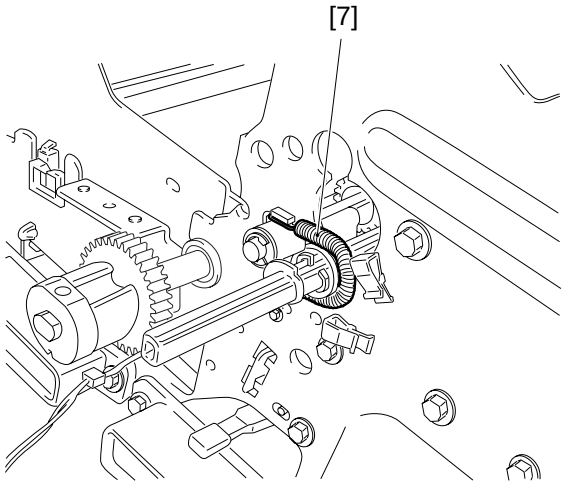

Figure 7-824

6) Remove the E-ring [9] and spring [10] of the registration roller upper [8]; then, remove the bushing [11].

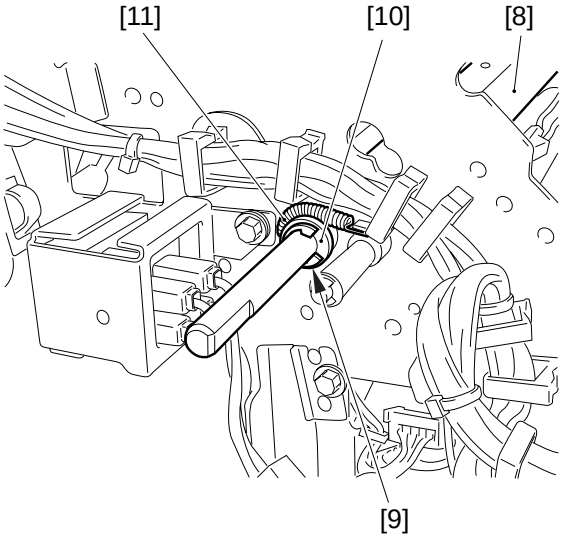

Figure 7-825

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7) Pull out the registration roller [12] as shown.

Caution:
The transparency sensor is located under the metal portion of the registration roller; be sure not to let the roller in contact with it.

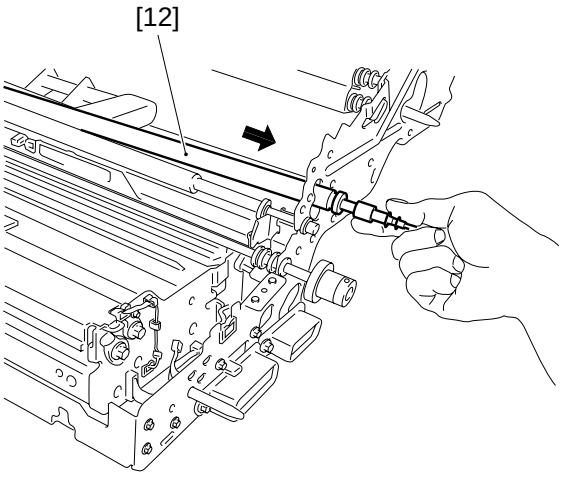

Figure 7-826

8) Remove the E-ring [13] and the washer [14]; then, pull off the bushing [15].

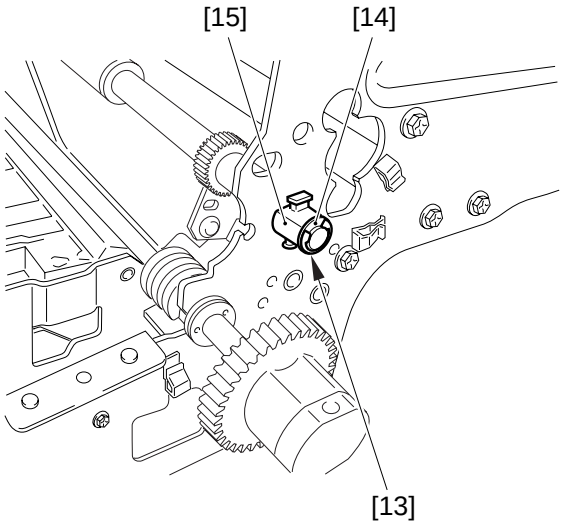

Figure 7-827

9) While holding the pressure releasing lever [16] in place by hand, shift the rubber roll shaft [17] to the left (in the direction of the arrow), and pull it to the front.

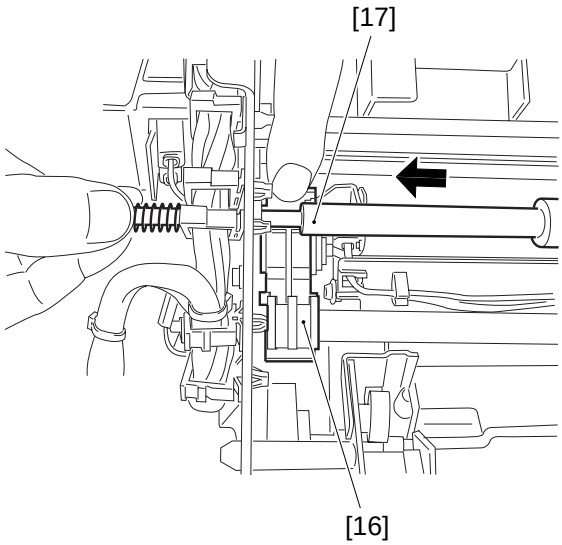

Figure 7-828

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10) Remove the E-ring [18], two washers [19], spring [20], and bushing [21].

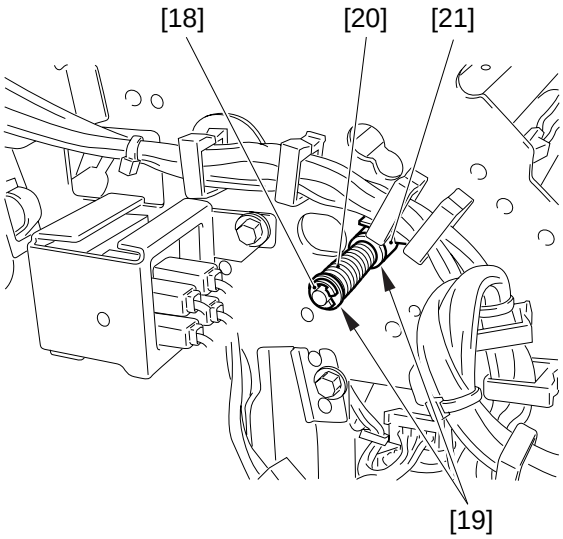

Figure 7-829

11) Pull out the registration rubber roller [22] as shown.

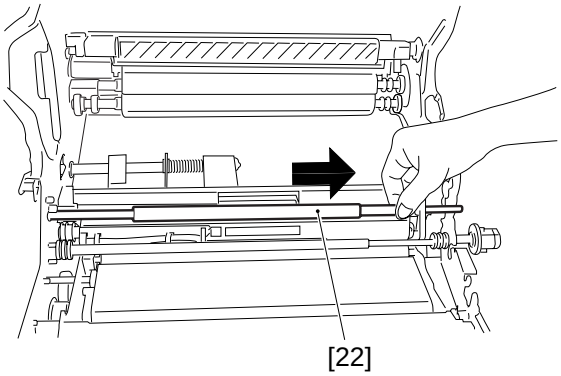

Figure 7-830

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8. Replacing the Registration Roller Releasing Spring Clutch Assembly

1) Remove the solenoid plate, and loosen the hex-hole screw [1] using a hex key; then, detach the spring clutch assembly [2].

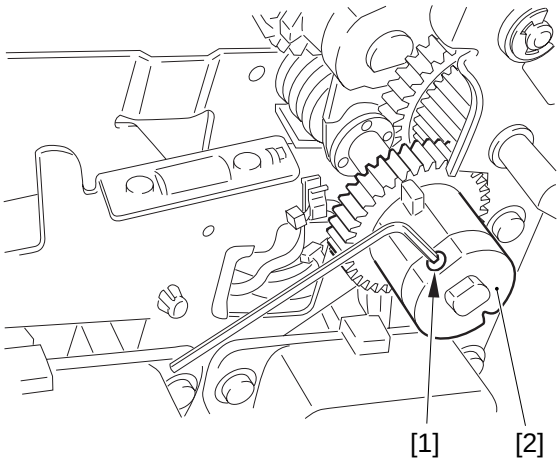

Figure 7-831

2) Clean the shaft to which the spring clutch assembly was attached with alcohol.
3) Loosen the hex-hole screw of the new spring clutch, and mount it to the shaft.
   At this time, keep the spring clutch butted against the E-ring side.
   Further, when tightening the hex-hole screw, be sure that the screw and the D-cut of the shaft are perpendicular.
4) Apply several drops of lubricating oil in the gap [5] between the gear [3] and the control ring [4] of the spring clutch.

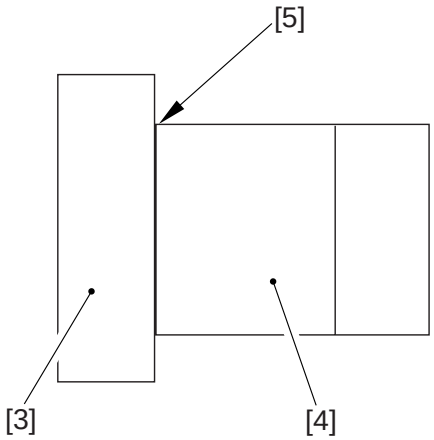

Figure 7-832

5) Thereafter, rotate the gear of the spring clutch several times so that the oil spreads in the gap between the gear and the control ring; then, apply several drops of oil once again.
6) Repeat steps 6) and 7) several times until about ten drops of oil have been applied in total.
7) Wipe off the oil that has spread to the control ring.

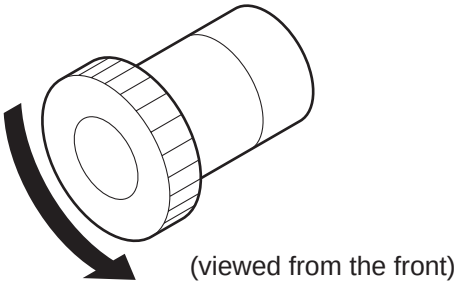

Figure 7-833

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C. Transfer Cleaner Unit

1. Removing the Transfer Cleaner Unit

1) Remove the transfer drum frame cover.
2) Remove the screw [1], and disconnect the two connectors [2]; then, detach the transfer cleaner unit.

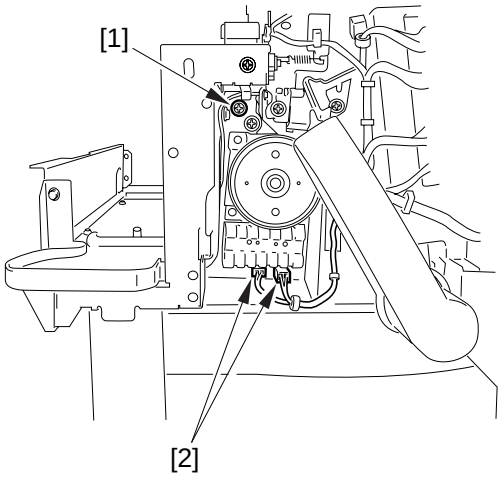

Figure 7-834

2. Removing the Transfer Cleaner Brush

1) Remove the transfer cleaner unit.
2) Turn the bushing [1] of the brush 180° in the direction of the arrow to detach the brush.

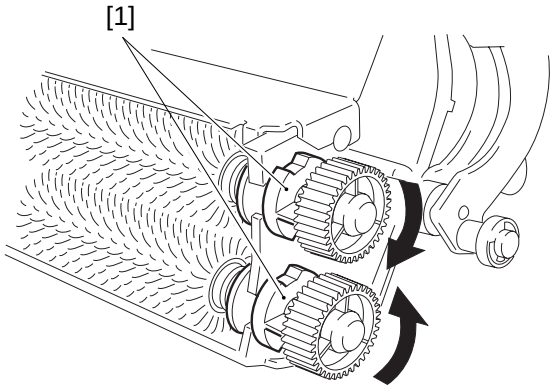

Figure 7-835

3. Removing the Scraper (upper, lower) of the Transfer Cleaner Unit

1) Remove the transfer drum unit.
2) Remove the transfer cleaner brush.
3) Remove the two screws [1], and detach the transfer cleaner cover [2].

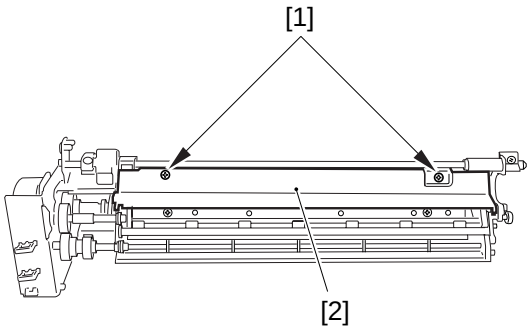

Figure 7-836

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4) Remove the two screws [3], and detach the scraper (upper, lower) [4].

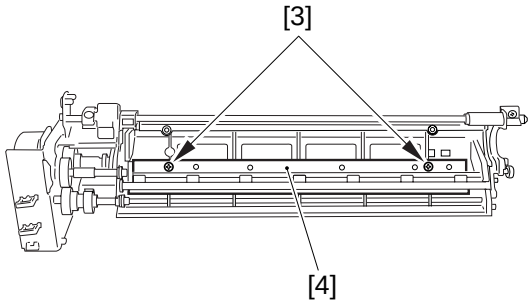

Figure 7-837

4. Removing the Transfer Drum Cleaner Assembly Filter

1) Remove the transfer cleaner unit.
2) Lift the rail guide plate [1].
3) Remove the screw [2], and detach the filter cover [3].
4) Remove the filter.

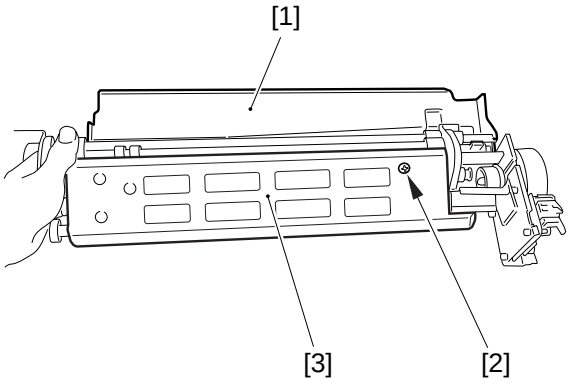

Figure 7-838

5. Applying Lubricant to the Transfer Drum Cleaner

1) Use a specific lubricant (e.g., FY9-6006).
2) Put a drop of lubricant (one drop each) at points indicated (A).
3) Turn the gear several times by hand so that the lubricant spreads inside the bushing.
4) Put another drop (one each) once again, and repeat step 3.
5) When all amounts of lubricant have spread to the inside of the bushing, wipe the excess lubricant with lint-free paper (indicated by dashed lines).

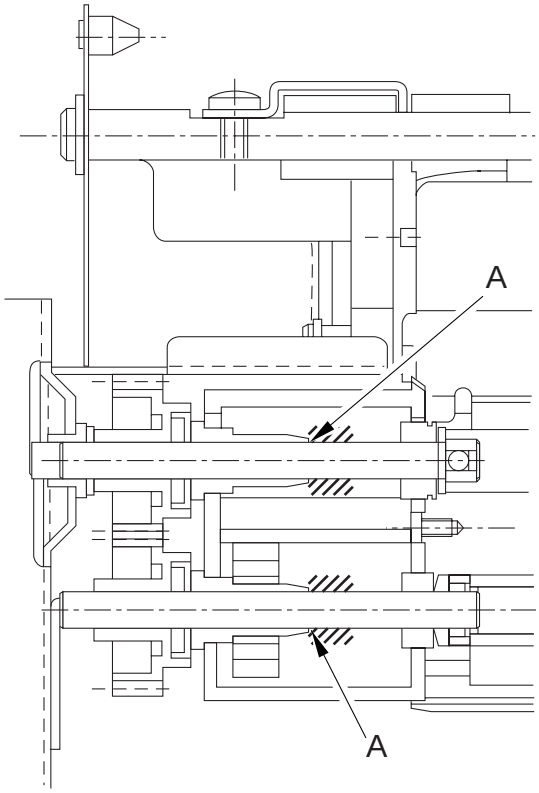

Figure 7-838a

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D. Transfer Drum Assembly

1. Construction

[1] Separation claw
[2] Separation charging assembly
[3] Separation push-up roll
[4] Transfer drum
[5] Transfer blade
[6] Attraction roller
[7] Attraction brush
[8] Internal static eliminator
[9] Transfer cleaner push-on brush
[10] Transfer polishing roller
[11] Transfer drum cleaner
[12] External static eliminator

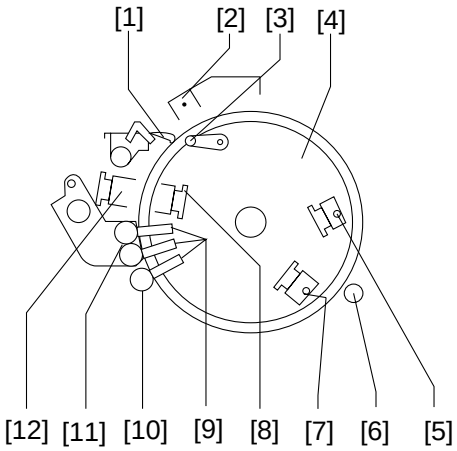

Figure 7-839

Caution:
The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum.
The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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2. Removing the Transfer Drum Sheet

1) Open the front cover, and slide out the hopper; then, open it 180°.
2) Slide out the transfer drum frame.
3) Remove the transfer drum from the transfer drum frame.
4) Remove the four TP screws [1], and remove the transfer drum side scraper [2].

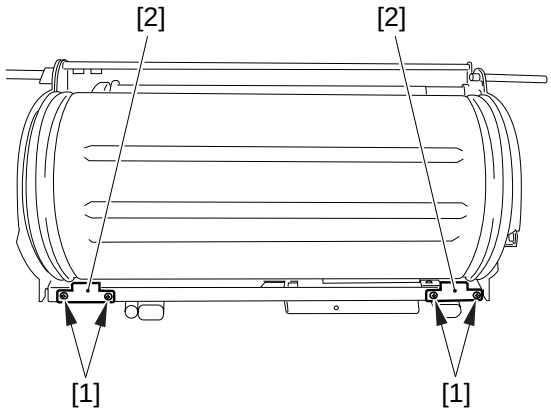

Figure 7-840

5) Peel off the trailing edge of the transfer drum sheet, and keep the edge loose.

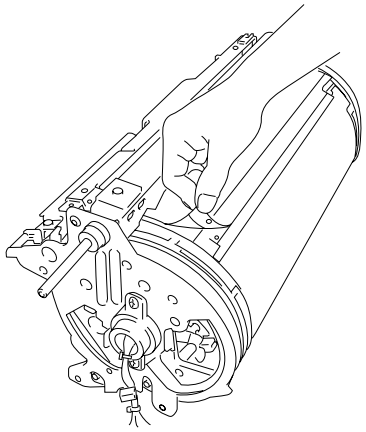

Figure 7-841

6) Peel off the leading edge of the transfer drum sheet.

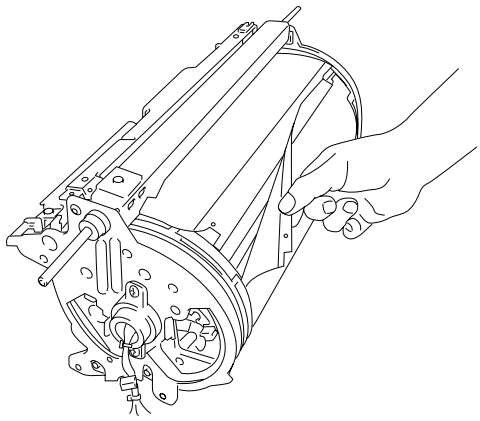

Figure 7-842

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7) As if to lift the leading edge of the transfer drum sheet, peel off the sheet.

Caution:
If adhesive remains on the ring of the transfer drum, be sure to remove it completely.

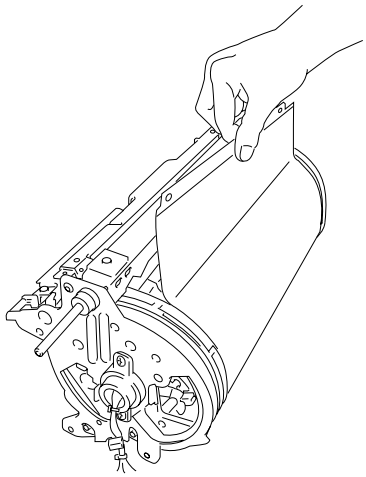

Figure 7-843

3. Attaching the Transfer Drum Sheet

Caution:
Take care not to touch the area of the transfer drum sheet where copy paper will come into contact.

1) Clean the area of the transfer drum ring where adhesive tape was found.
2) Rotate the ring so that the ring connecting plate [1] is as shown.

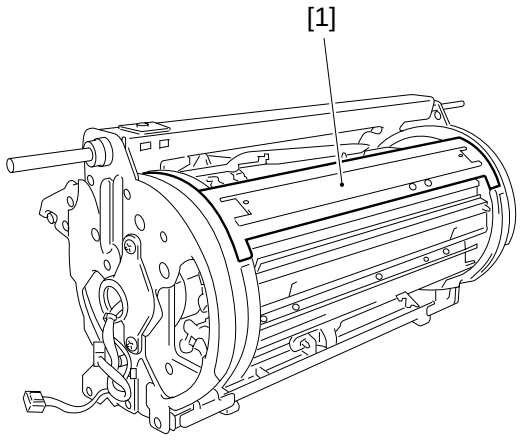

Figure 7-844

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3) Peel the adhesive tape from the adhesive tape from the leading edge (where holes are found) of the transfer drum sheet.
4) Match the holes along the leading edge of the transfer drum sheet with the holes in the ring connecting plate, and attach the leading edge of the sheet.

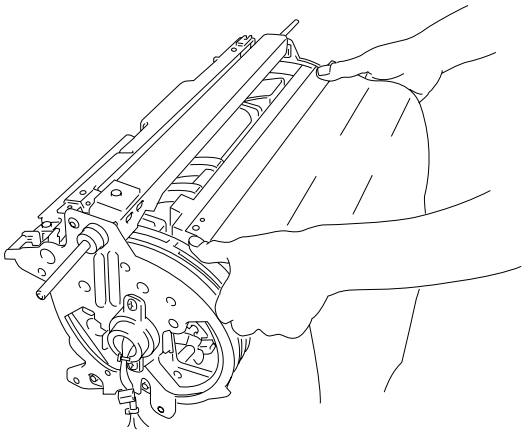

Figure 7-845

5) Peel off the adhesive type of the transfer drum sheet.
6) Holding the trailing edge of the transfer drum sheet with your right hand, rotate the ring at the front of the transfer drum by your left hand while letting the sheet down on its own weight.

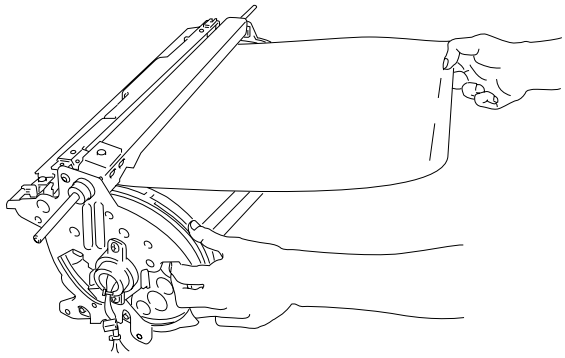

Figure 7-846

Caution:
When the entire area of the transfer drum sheet has been attached, check to make sure that the discrepancy between the leading edge and the trailing edge of the transfer drum sheet is 0 ±1.5 mm.

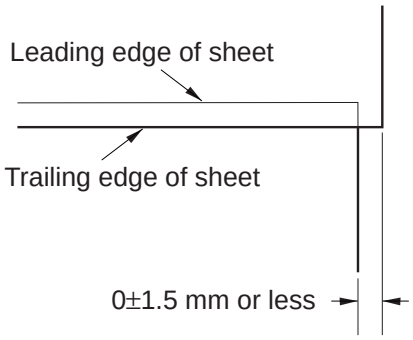

Figure 7-847

7) While keeping the leading edge of the transfer drum sheet down, even out the sheet by rubbing it from the center to the sides.

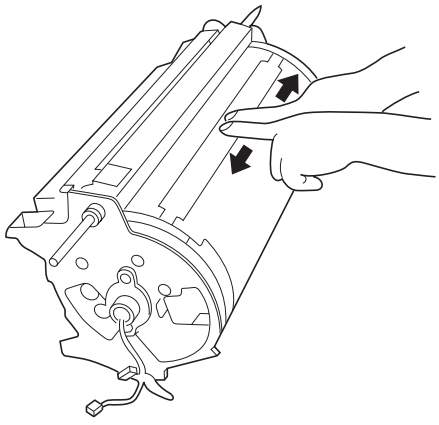

Figure 7-848

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Caution:

Be sure that the center of the transfer drum sheet does not warp or is slack. If it warps, the transfer drum sheet will come into contact with the photosensitive drum, allowing toner to cake on the photosensitive drum and, consequently, leading to photosensitive drum cleaning faults.

If it is slack, white spots, color displacement, or other image faults can occur.

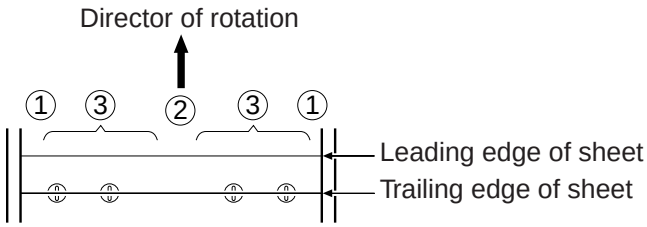

Figure 7-849

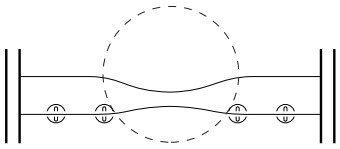

Figure 7-850

8) Smooth out the area of the transfer drum sheet where adhesive tape is found with your fingers once again so that the sheet is securely attached to the transfer drum.
9) Check the transfer drum sheet for scratches, dents, and slack.
10) Fit the transfer drum frame into the copier.

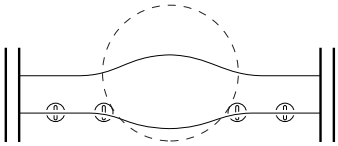

Figure 7-851

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4. Removing the Attraction Brush

1) Turn the locking lever [1] clockwise to free the lock.
2) Remove the screw [2], and pull out the attraction brush [3].

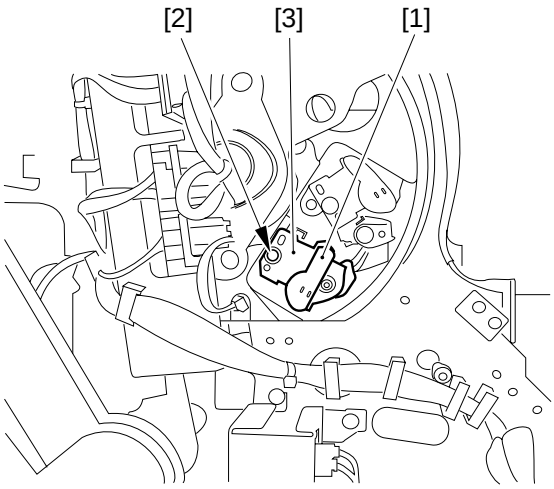

Figure 7-852

5. Remove the Transfer Blade

1) Turn the locking lever [1] clockwise to free the lock.
2) Remove the screw [2]; then, pull out the transfer blade [3].

Caution:
When pulling out the transfer blade, take care not to bring the plastic film into contact with the flange.

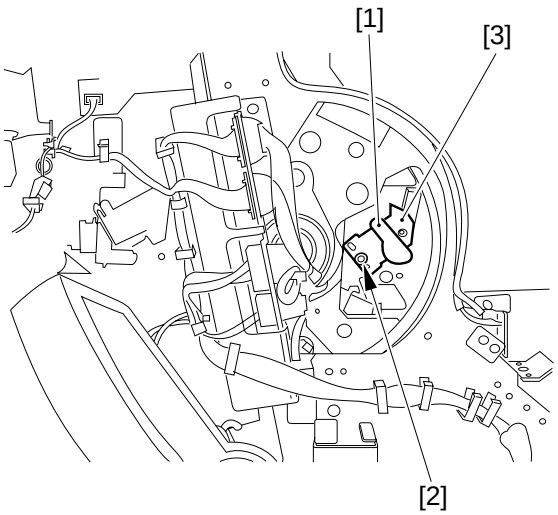

Figure 7-853

6. Removing the External Static Eliminator

1) Remove the fixing assembly cover.
2) Remove the screw [1], and remove the leaf spring [2].
3) Remove the screw [3], and pull off the external static eliminator [4].

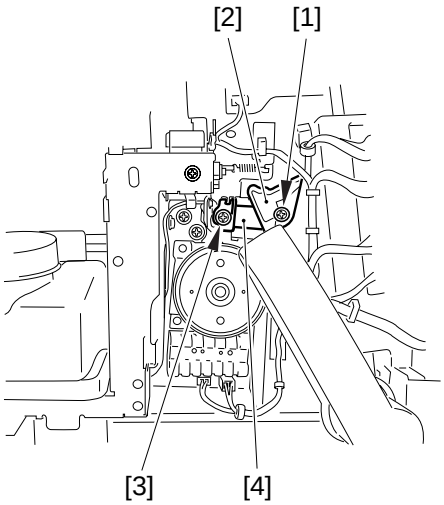

Figure 7-854

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7. Removing the Internal Static Eliminator

1) Remove the transfer drum from the transfer drum frame.
2) Turn the transfer drum to match the holes in the plate at the rear of the transfer drum and the holes in the transfer drum.
3) Remove the claw [1], and pull out the internal static eliminator [2]

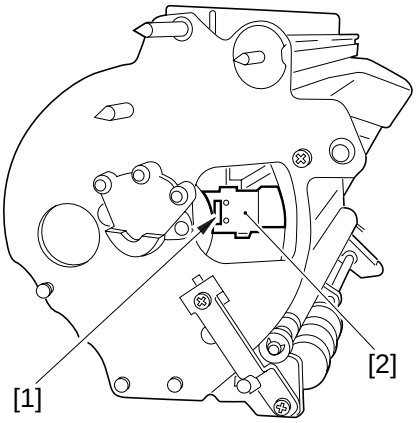

Figure 7-855

8. Removing the Separation Changing Assembly

1) Pull out the transfer drum frame.
2) Remove the screw [1], and remove the separation charging assembly [2].

Caution:
Be sure to use the initial screw (binding; M4x6) when mounting the separation charging assembly. The use of a longer screw will result in irregular intervals.

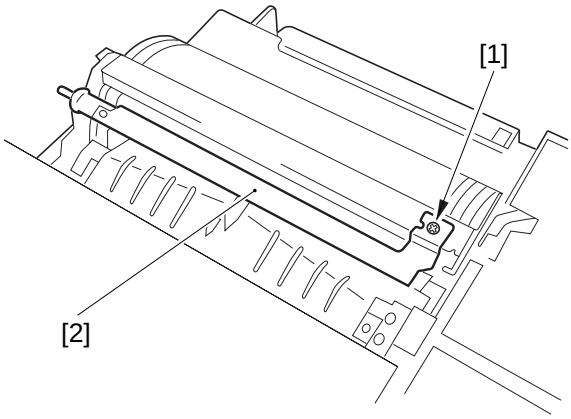

Figure 7-856

9. Removing the Polishing Roller

1) Remove the transfer drum from the transfer drum frame.
2) Push the transfer roller [1] toward the front of the transfer drum to remove.

Caution:
Take care not to touch the transfer sheet.

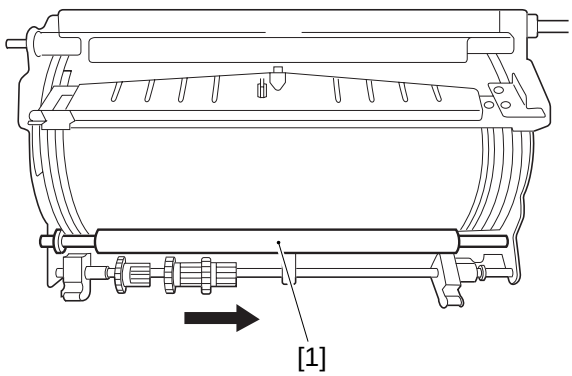

Figure 7-857

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10. Removing the Polishing Roller Unit

1) Remove the transfer drum from the transfer drum frame.
2) To protect the transfer sheet from scratches, place the transfer drum unit on a fault place.

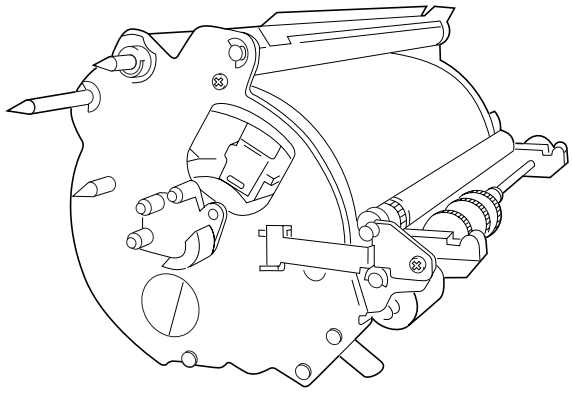

Figure 7-858

3) Remove the screw [1], and push down the polishing roller locking lever [2] once; then, turn it clockwise to free the lock.

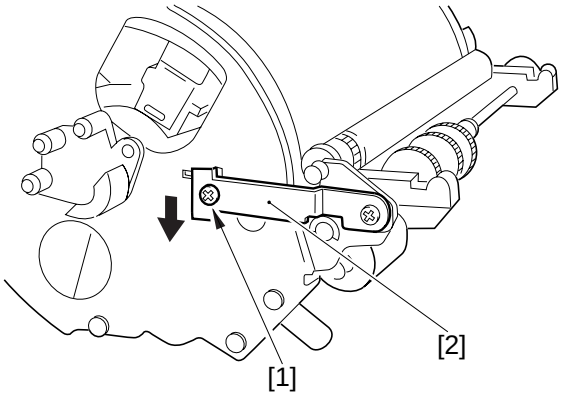

Figure 7-859

Caution:

The four pins [3] used to keep the spring from turning will slip off when the lock is freed. Take care not to lose these pins.

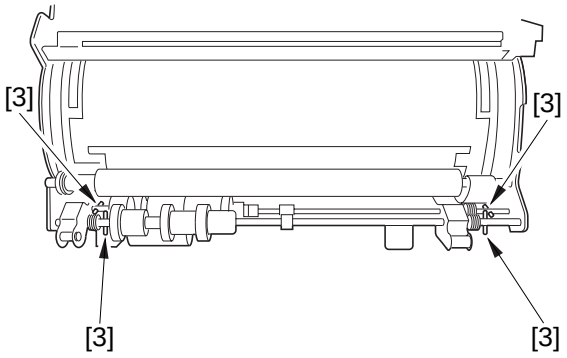

Figure 7-860

4) Remove the screw [4], E-ring [5] (inside the shaft 1), and shaft connecting member [6]; then, detach the gear unit 1 [7] together with its shaft.

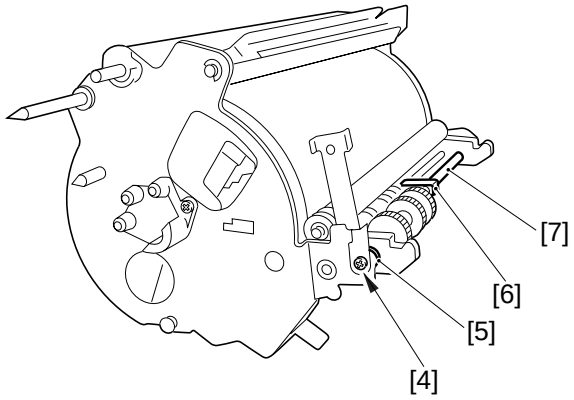

Figure 7-861

5) Remove the two E-rings [8] (outside the shaft 2) and the screw [9], and disconnect the connector [10]; then, remove the polishing roller motor unit [11].

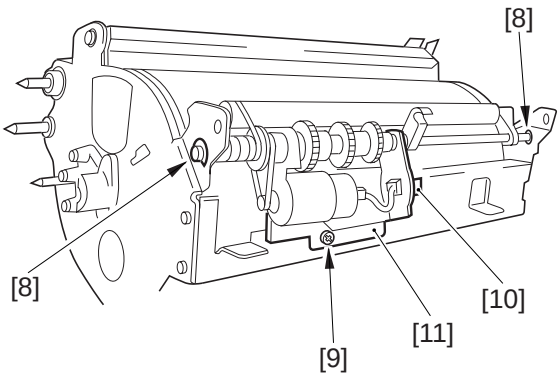

Figure 7-862

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11. Removing the Separation Push-Up Solenoid

1) Remove the transfer drum from the transfer drum frame.
2) Remove the four screws [1], and detach the two transfer sheet scrapers [2].
3) Peel off the transfer sheet.

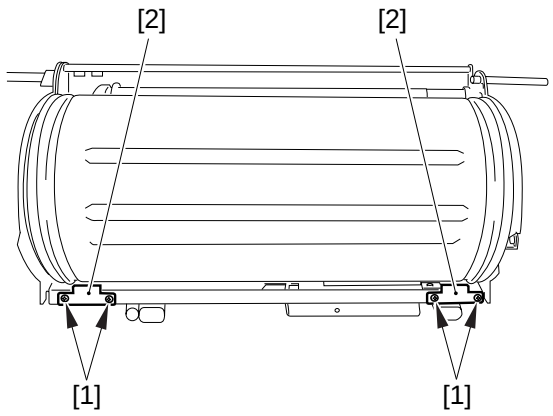

Figure 7-863

4) Disconnect the connector [3], and remove the spring [4].

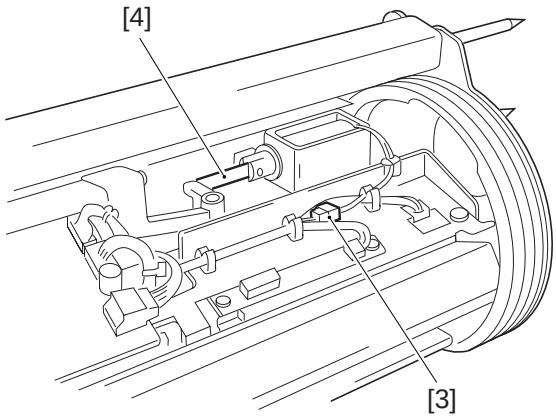

Figure 7-864

5) Remove the E-ring [5] from the front side plate of the transfer drum.

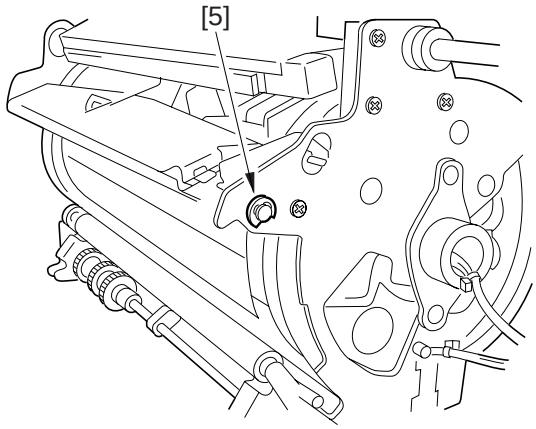

Figure 7-865

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6) Remove the E-ring [6] from the rear side plate of the transfer drum, and detach the separation claw unit.

Caution:
Pay attention to the spring on the shaft of the separation claw unit.

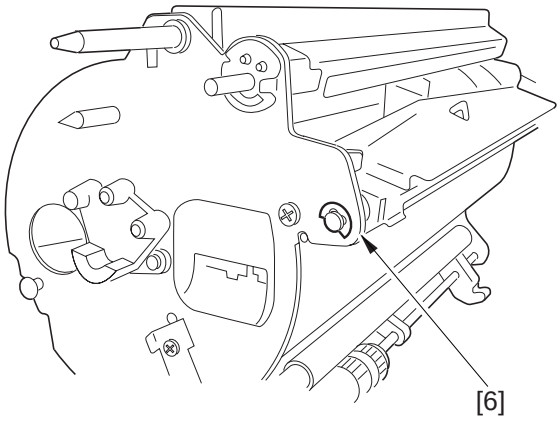

Figure 7-866

7) Remove the two screws [7], and detach the separation push-up solenoid [8].

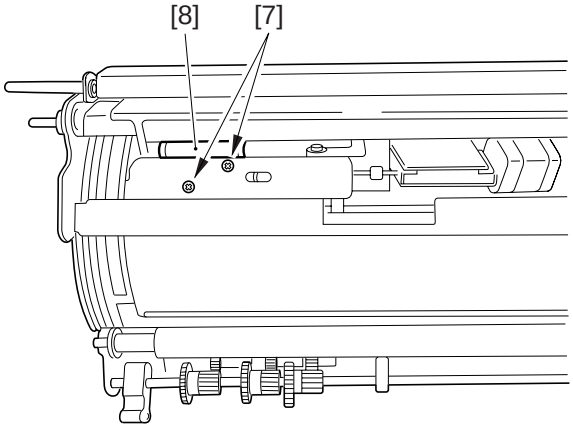

Figure 7-867

12. Remove the Brush Motor (M11)

1) Remove the transfer drum from the transfer drum frame.
2) Remove the four screws [1], and remove the two transfer sheet scrapers [2].

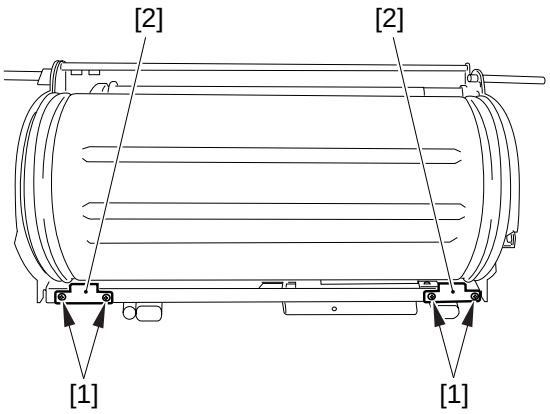

Figure 7-868

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3) Peel off the transfer sheet.
4) Disconnect the connector [3], and remove the two screws [4]; then, detach the brush motor [5].

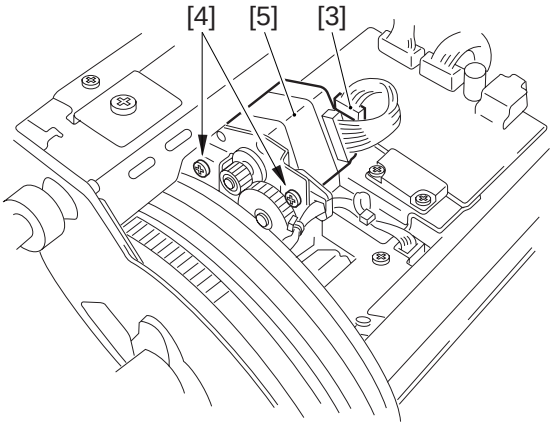

Figure 7-869

13. Removing the Transfer Cleaner Push-On Brush Unit

1) Remove the transfer drum from the transfer drum frame.
2) Remove the polishing roller unit.
3) Peel off the transfer sheet.
4) Turn the transfer drum ring so that the dent (shown in the figure) in the rear ring is opposite the brush.

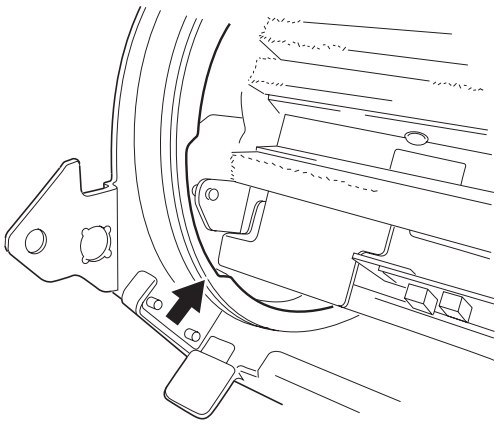

Figure 7-870

5) Remove the two screws [1], and disconnect the connector [2]; then, remove the transfer cleaner push-on brush unit.

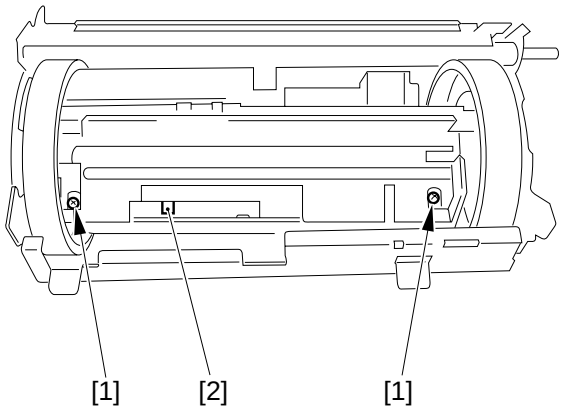

Figure 7-871

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14. Removing the Separation Push-Up Roll

1) Remove the transfer drum from the transfer drum frame.
2) Peel off the transfer sheet.
3) Remove the separation push-up roll [1].

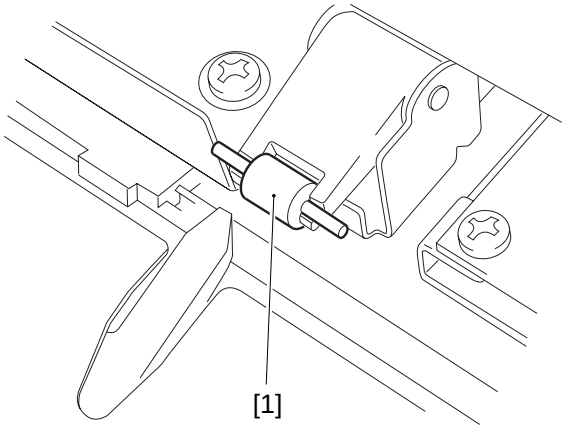

Figure 7-872

E. Transfer Drum Locking Motor Assembly (PM5)

1) Slide out the transfer drum frame.
2) Remove the rear cover.
3) Open the CPU PCB.
4) Remove the two screws [1], and disconnect the two connectors [2]; then, detach the transfer drum locking motor assembly.

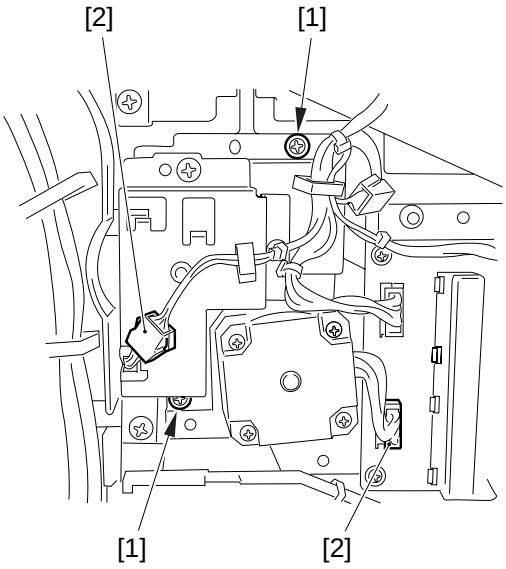

Figure 7-873

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F. Transfer Drum Cleaner Locking Motor Assembly (PM6)

1. Removing the Transfer Drum Cleaner Locking Motor Assembly

1) Slide out the transfer drum frame.
2) Remove the rear cover.
3) Open the CPU PCB.
4) Remove the screw [1], and disconnect the external static eliminator connector [2].
5) Remove the two screws [3], and remove the fixing assembly connector base [4].
6) Remove the three screws [5], and disconnect the two connectors [6]; then, detach the transfer drum cleaner locking motor assembly.

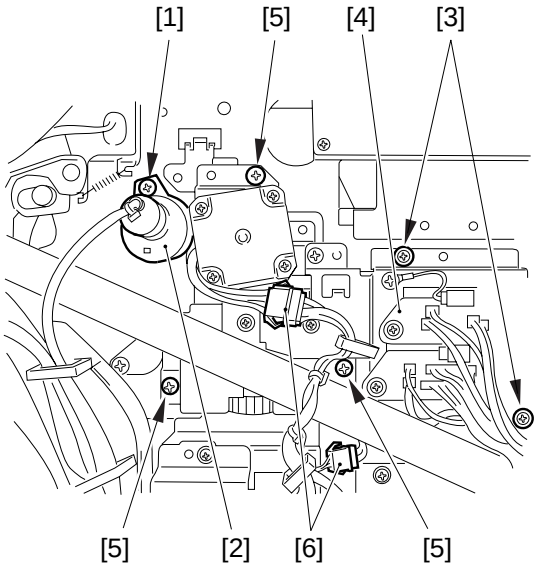

Figure 7-874

G. Delivery Assembly (CLC1120/1130 only)

1. Removing the Delivery Assembly

1) Remove the left upper cover.
2) Remove the delivery cover.
3) Remove the four screws [1], and disconnect the connector [2].
4) Slide out the delivery assembly to detach.

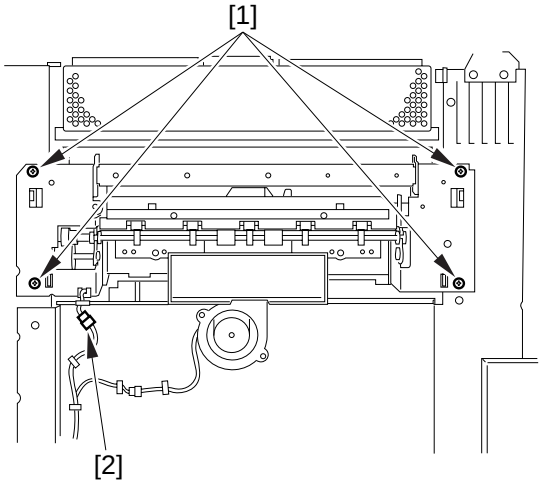

Figure 7-875

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H. Duplexing Delivery Assembly (CLC1150 only)

1. Removing the Duplexing Delivery Assembly

1) Remove the left upper cover and the left lower cover.
2) Remove the delivery upper cover.
3) Remove the nine screws [1], and disconnect the two connectors [2].
4) Slide out the delivery unit slowly to detach.

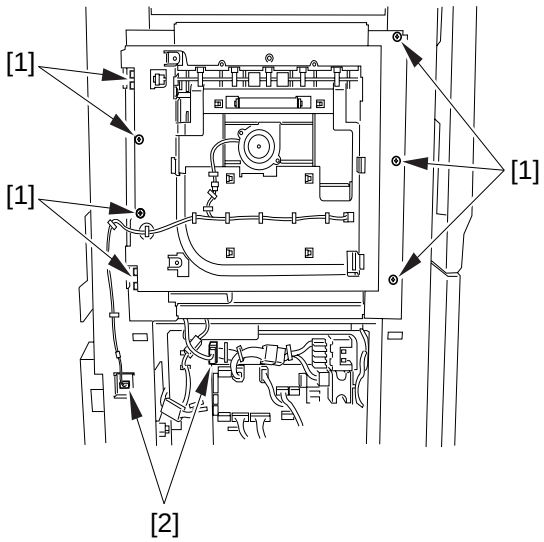

Figure 7-876

2. Position of the Delivery Assembly Paper Deflecting Plate Drive Solenoid (SL10)

1) Remove the delivery assembly.
2) Place the delivery assembly on its end on a level surface.
3) Loosen the adjusting screw [4] to make adjustments while keeping the paper deflecting plate [2] butted against the delivery upper guide [3] when the solenoid [1] is on while viewing from the rear of the delivery assembly.

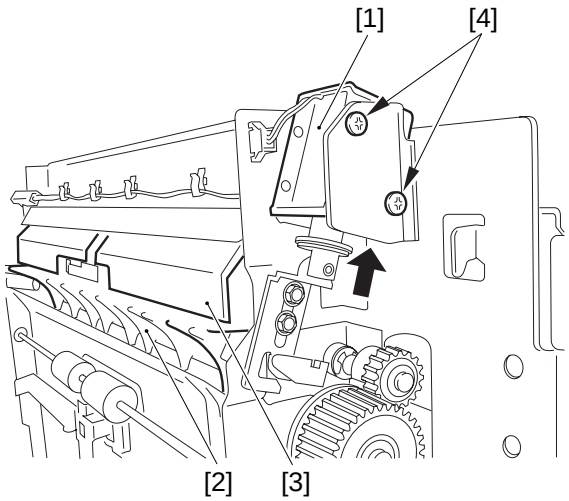

Figure 7-877

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CHAPTER 8

FIXING SYSTEM

This chapter explains the operations and functions of the copier's fixing system and the relationship between the electrical and mechanical systems, and provides an outline of the timing at which various associated parts are driven.

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I. OPERATIONS

A. Outline

Table 8-101 shows the major functions of the fixing unit assembly.

Item	Description
Method	Heat roller method
Fixing assembly drive	Fixing motor (M5)
Fixing heater	Main heater (H1): 540 W (100/120 V), 700 W (230 V) Sub heater (H2): 500 W (common to all voltage models)
Fixing temperature detection	Fixing upper thermistor 1 (THM1; at center of fixing upper roller) Fixing upper thermistor 2 (THM2; at front end of fixing upper roller) Fixing lower thermistor 3 (THM3; at center of fixing lower roller) Fixing lower thermistor 4 (THM4; at rear end of fixing lower roller)
Cleaner	Fixing upper cleaning belt (for fixing upper roller) Fixing lower cleaning belt (for fixing lower roller) · Life estimated at about 25,000 copies. · Driven by the fixing upper cleaning belt solenoid (SL1) and the fixing lower cleaning belt (SL2). · Number of operations varies according to the size of copy paper. Small size (182 to 216 mm; 1 operation per copy) Large size (217 to 432 mm; 2 operations per copy) · Length of cleaning belt detected by the following: Fixing upper cleaning belt length sensor (PS11) Fixing lower cleaning length sensor (PS67)
Oil application	· Circulatory application of silicone oil by the oil pump (PSP1), felt, and applying blade. Capacity: equivalent of about 50,000 copies/L. Detection of oil level: by fixing oil level sensor (PS10)
Protective function	Detection is executed as follows; shuts off the power to the fixing heater in response to an error: · Reading of thermistors (TH1 through TH4) · Error in SSR · Operating temperature (220°C) of the fixing upper thermal switch (TP2; rear end of upper roller) · Operating temperature (220°C) of the fixing lower thermal switch (TP3; front end of lower roll)

Table 8-101

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Related Service Code

DISPLY>ANALOG>FIX-U	Fixing upper roller temperature
DISPLY>ANALOG>FIX-L	Fixing lower roller temperature
DISPLY>ERROR	Error history display
FUNCTION>FIXING>NIP-CHK	Nip measurement
COUNTER>MISC>FIX-WEB	Cleaning belt counter clear

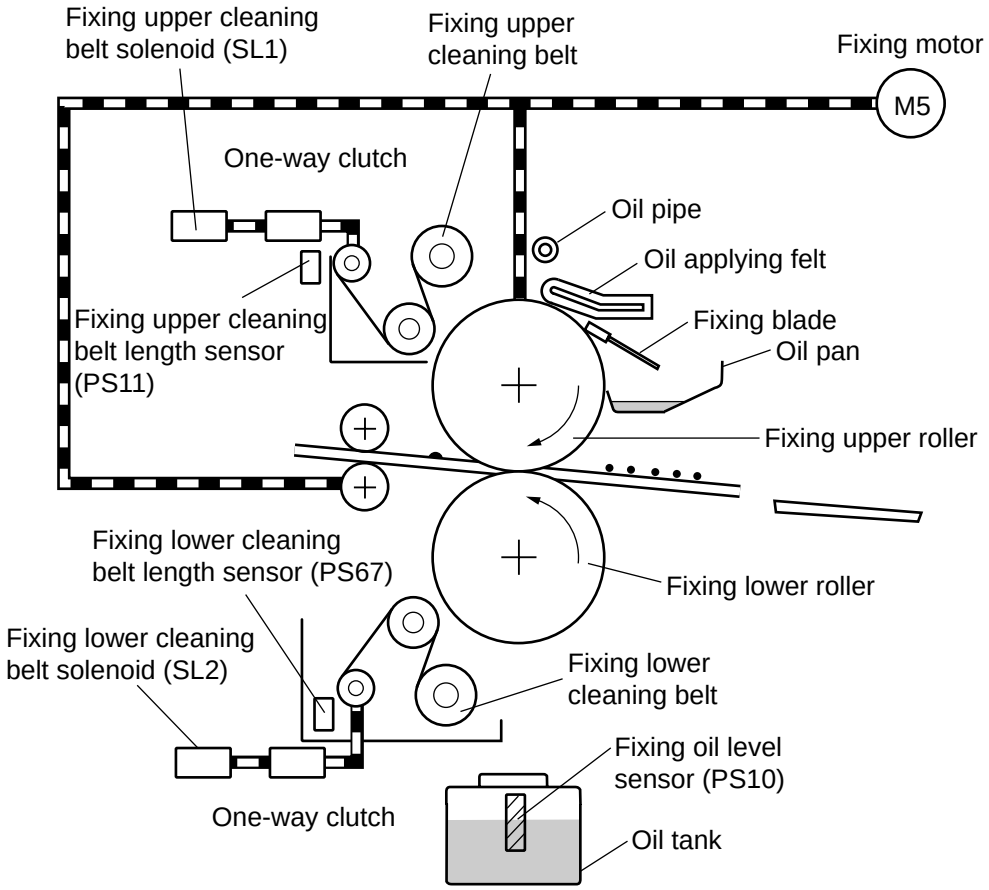

Figure 8-101

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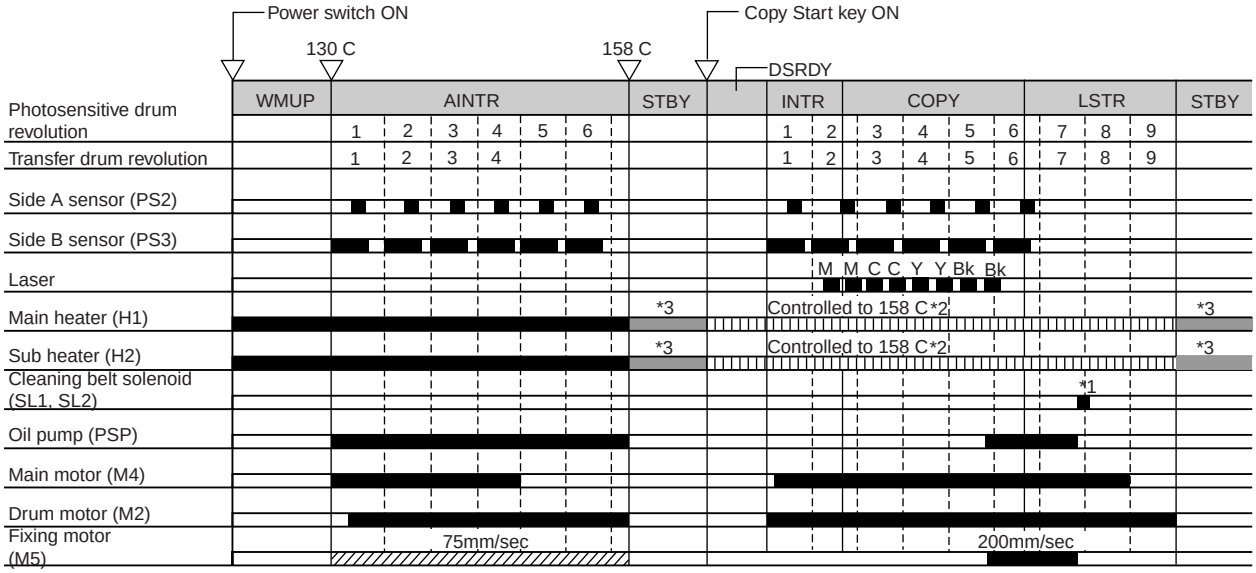
B. Sequence of Operations (fixing system)



*1: If small size, once per copy; for large size, twice per copy.
*2: For normal full color copying.
For 3 hr from the start (if the temperature of the fixing roller is 100°C or less when the power switch is turned on), controlled to 163°C in the case of full-color copying.
For normal mono-color copying, controlled to 163°C; for 3 hr from the start, controlled to 168°C.
Controlled to 168°C in the case of mono-color copying.
*3: For 3 hr from the start, controlled to 163°C; for others, controlled to 158°C.

Figure 8-102

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II. FIXING DRIVE SYSTEM

A. Controlling the Speed of the Fixing Roller

The copier controls its fixing at one of two speeds to ensure good fixing performance for all types of transfer media (plain paper, transparency).

The fixing motor starts to rotate when the drive signal (FXMON) goes '1', and its speed is switched based on the combination of the states of the speed switch signals (FXMSP0, FXMSP1).

Related Error Code

E014
This code is indicated if the speed of rotation of the fixing motor deviates from a specific value and the motor clock signal (FXMLK) goes '0'.

To prevent deformation otherwise caused by pressure, the fixing roller is rotated for about 0.6 sec at low speed (75 mm/sec) at intervals of 30 min after it has stopped rotating (in standby state).

Mode	Speed switch signal		Fixing speed
	FXMSP0	FXMSP1	
Plain mode* (fixing on plain paper)	1	1	200mm/sec
Initial multiple rotation, thick paper * (106 to 209 g), transparency mode	0	1	75mm/sec

*Both first and second sides.

Table 8-201

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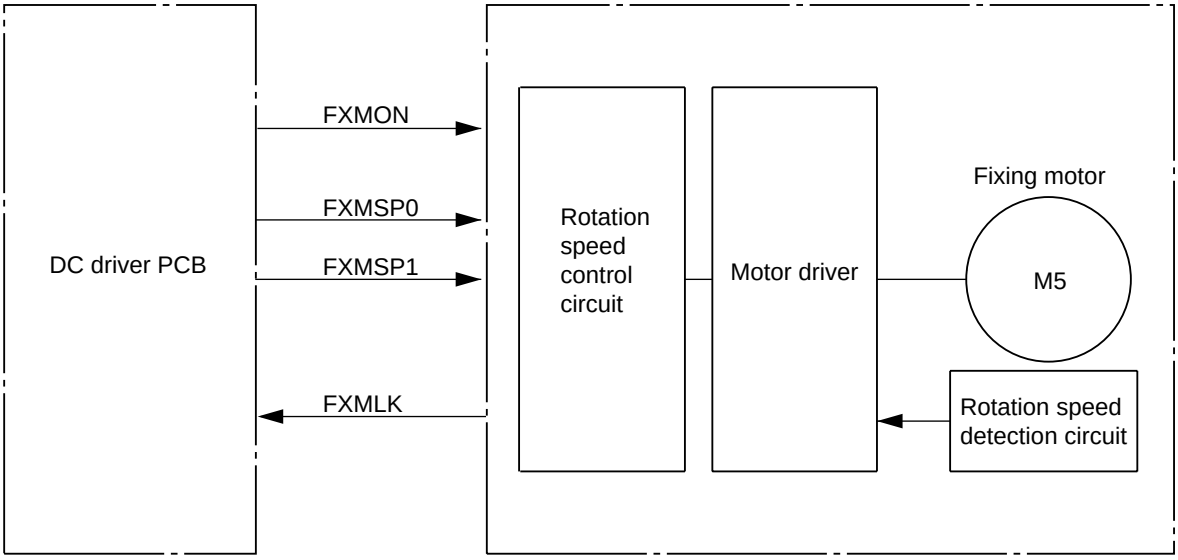
DC driver PCB
FXMON
FXMSP0
FXMSP1
FXMLK
Rotation speed control circuit
Motor driver
Fixing motor
M5
Rotation speed detection circuit

Figure 8-201

B. Taking Up the Fixing Cleaning Belt

The copier's fixing upper and lower rollers are each equipped with a cleaning mechanism which uses a cleaning belt.

The cleaning belt is taken up about 0.4 mm each time the fixing cleaning belt solenoid (SL1 for upper, SL2 for lower) turns on and off.

The number of times the fixing cleaning belt turns on and off depends on the length of copy paper (feeding direction; both upper and lower solenoids).

Copy paper size	Number of operations
Small size (182 to 216 mm)	Once per copy
Large size (217 to 432 mm)	Twice per copy

Note 1: In the case of a transparency, once per sheet.
Note 2: The number of times the fixing cleaning belt turns on and off is the same for both upper and lower solenoids.

Table 8-202

A cut is made near the end of the cleaning belt. When the cleaning belt is taken up as far as the cut, the arm so far supported by the belt drops through the cut, causing the fixing cleaning belt sensor (PS11 for upper, PS67 for lower) to detect the end portion of the cleaning belt. The copier will indicate a warning to communicate that the cleaning belt is running out when the sensor detects the arm.

Related Error Code

E005
This code is indicated when the fixing cleaning belt solenoid has turned on and off about 200 times after the warning has been issued. Replace the cleaning belt, and execute COUNTER>MISC>FIX-WEB in service mode; then, turn off and then on the power switch to reset the belt counter.

Reference:

1. The copier is not equipped with a mechanism to move the belt to and away from the fixing roller (i.e., both upper and lower cleaning belts remain in contact with the fixing roller at all times).
2. The cleaning belt is 10 m long, and the aforementioned cut is made 9.4 m from its leading end.

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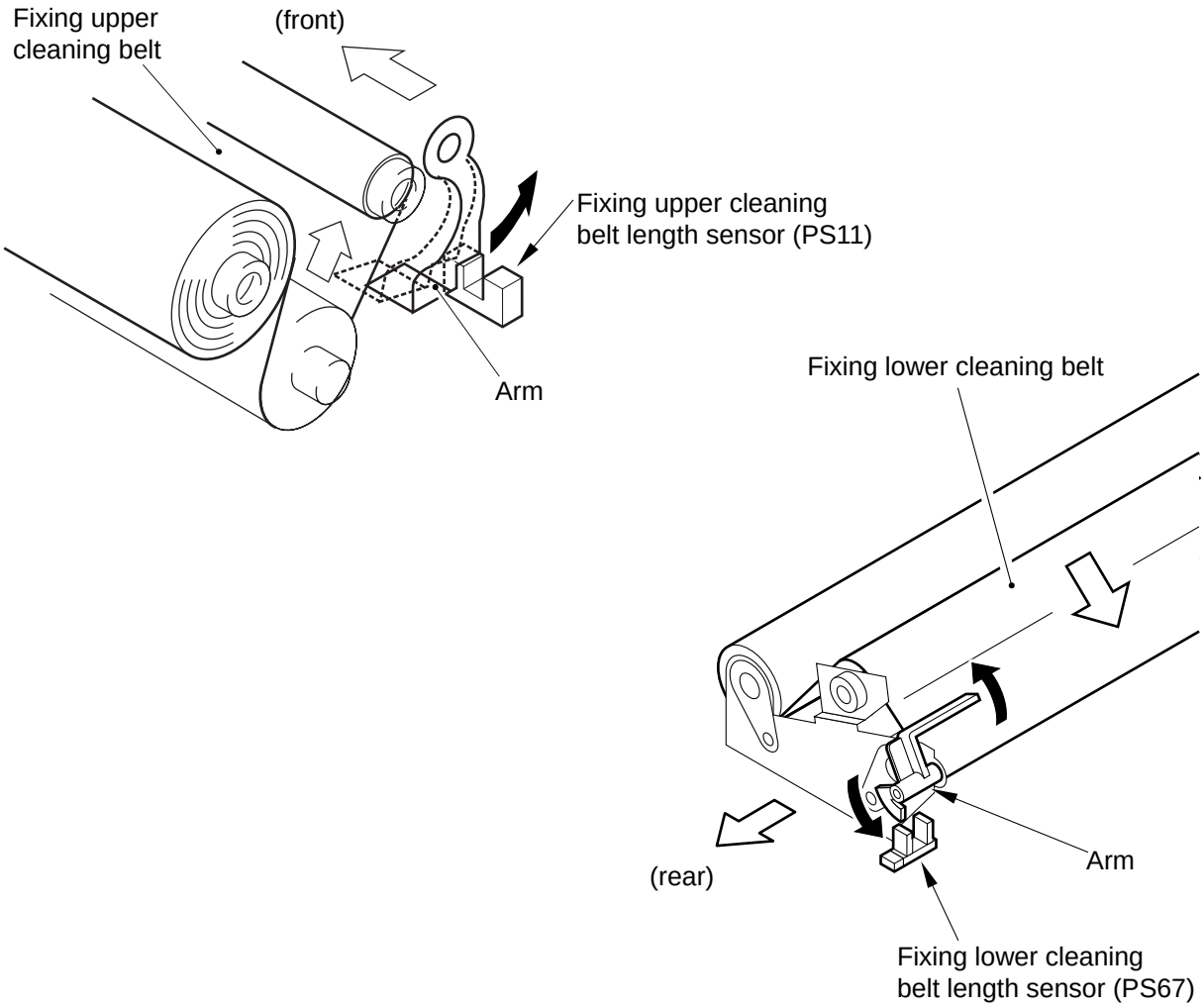

Figure 8-202

C. Fixing Oil Applying Mechanism

The copier uses a circulatory method to apply fixing oil, and oil is applied directly to the fixing upper roller and spread by oil applying felt to prevent offset.

The fixing oil inside the oil tank is drawn in sync with the operation of the fixing motor (M5) by means of an oil pump (PSP1; piezoelectric oscillator type), and is supplied to the fixing upper roller.

The oil pump consists of a piezoelectric element and backflow preventing valves (one each on the suction and discharge sides). The piezoelectric element warps to take on a convex or concave shape when a voltage is applied, servicing to move fixing oil from the suction side to the discharge side by repeating this operation.

The filter inside the oil pan serves to clean the fixing oil in circulation. Foreign matter and excess fixing oil are moved away to the oil pan by the fixing blade.

The level of fixing oil inside the oil tank is monitored by a fixing oil level sensor (PS10) of a reflecting type found inside the oil tank; when the fixing oil is more than a specific level, the light directed by PS10 to the oil is reflected and received by PS10 (fixing oil detection signal FXOILD=1).

If PS10 does not detect fixing oil for about 10 sec, the copier will indicate the Add Fixing Oil message on its control panel.

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Related Error Code

E008

0000 This code is indicated if the oil pump driver PCB does not operate in the presence of the oil pump drive signal (FXOILPD=1) generated by the DC-CPU.

0001 This code is indicated when the oil pump driver PCB is in operation while the DC-CPU keeps the oil pump drive signal (EXOILPD=0) off.

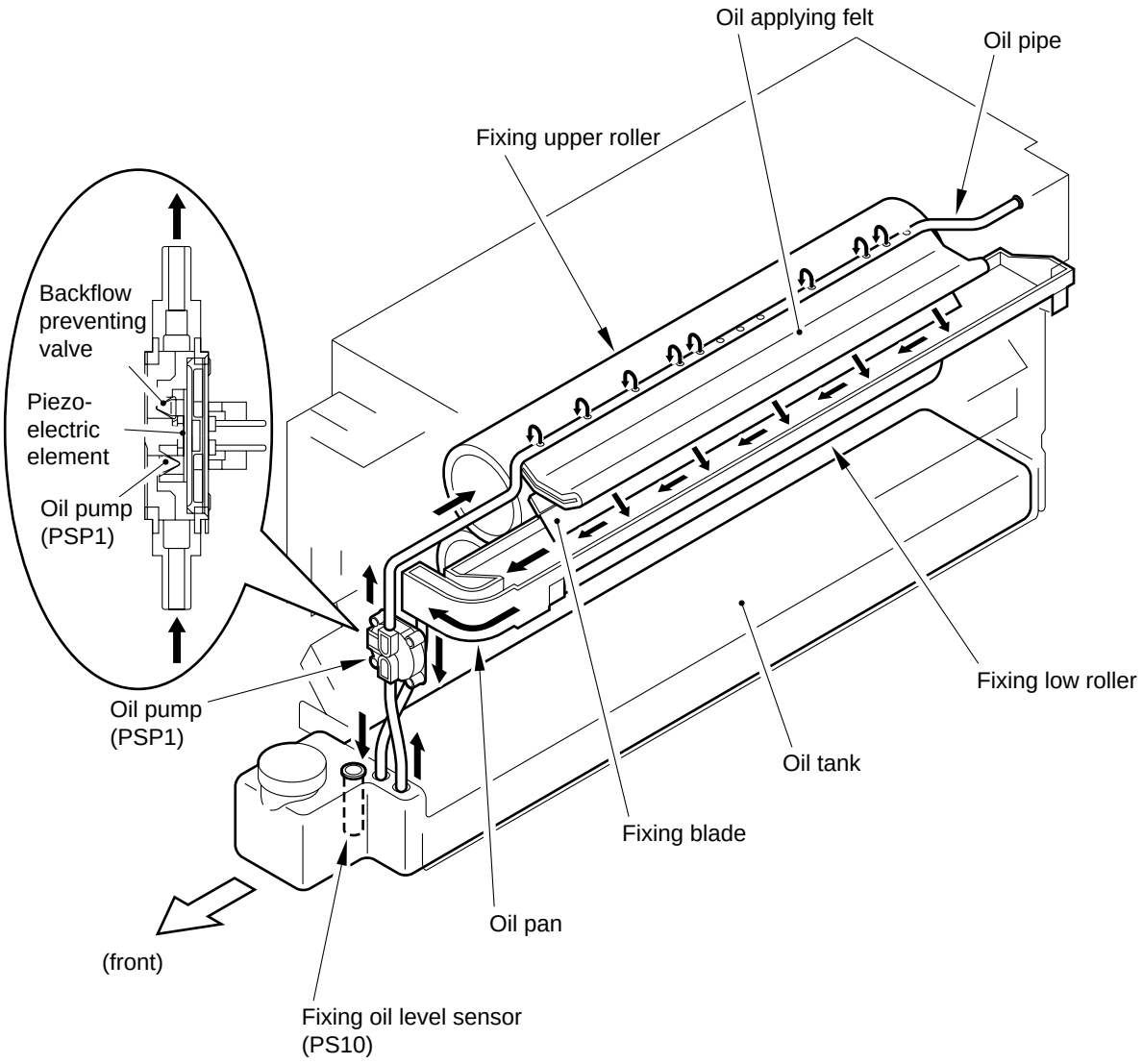

Figure 8-203

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III. CONTROLLING THE FIXING TEMPERATURE

A. Controlling the Temperature of the Fixing Roller

The fixing upper roller and the fixing lower roller are each heated by a fixing heater (main heater H1, sub heater H2). The surface temperature of the upper roller is monitored by the fixing upper thermistor 1 (THM1) and that of the lower fixing roller is monitored by the fixing lower thermistor 3 (THM3) in terms of voltage.

Using voltage readings, the DC-CPU on the CPU PCB causes the fixing upper heater drive signal (UHON) and the fixing lower heater drive signal (LHON) to go '1' or '0' so as to control the surface temperature of each roller to a specific level. (See Table 8-301.)

If energy saver mode has been selected in user mode, the surface temperature of the upper roller and the lower roller is controlled as shown in Table 8-302.

Operation	Control temperature	
	Upper roller	Lower roller
During full-color copying	158°C (156°C)	158°C (156°C)
During mono-color copying	163°C (161°C)	163°C (161°C)
During standby	158°C (156°C)	158°C (156°C)

Note: The values in parentheses indicate the temperature detected by the thermistor.

Table 8-301

Saving rate	Recovery time	Control temperature
0%	0 sec	158°C
10%	75 sec	135°C
25%	210 sec	100°C
50%	420 sec	50°C

table 8-302

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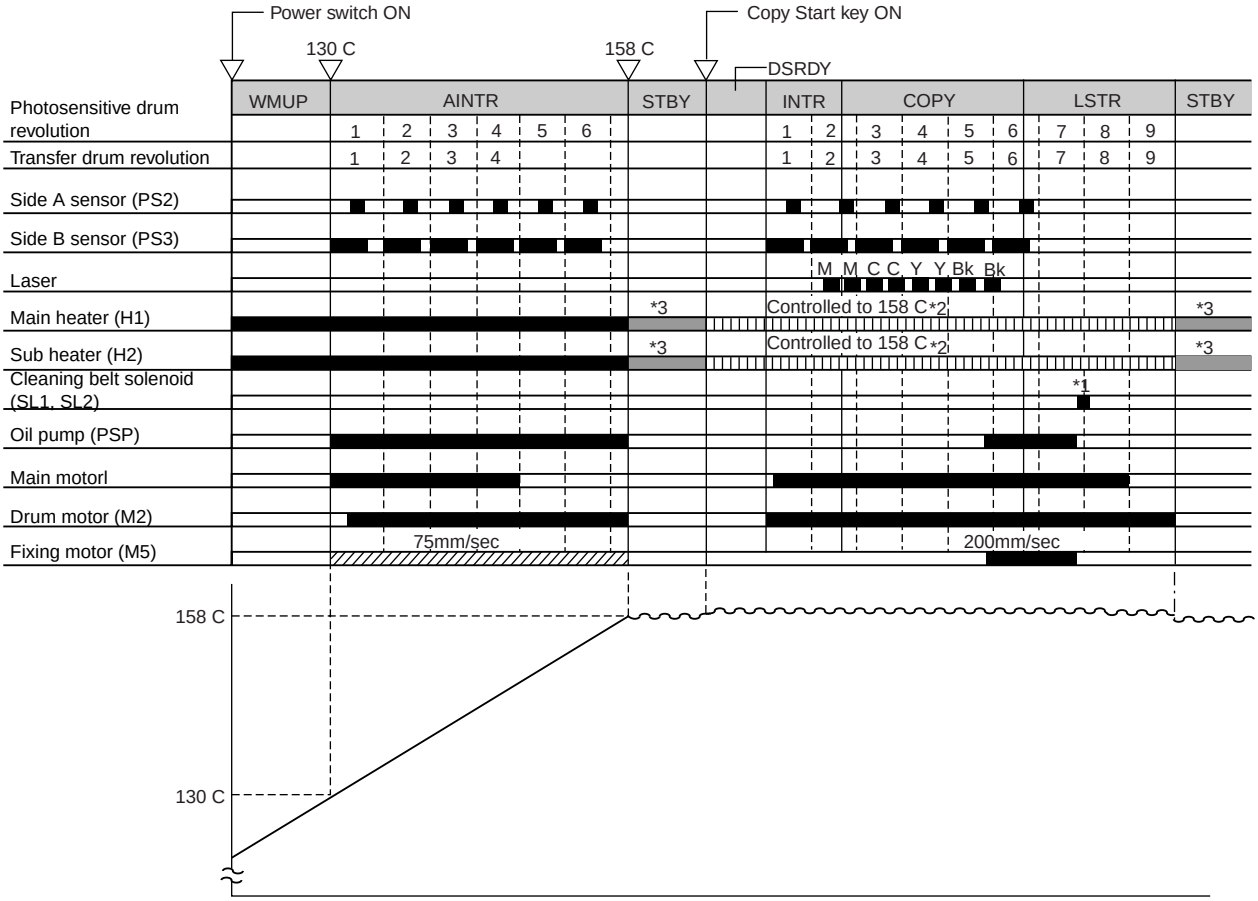

*1: If small size, once per copy; for large size, twice per copy.
*2: For normal full color copying.
For 3 hr from the start (if the temperature of the fixing roller is 100°C or less when the power switch is turned on), controlled to 163°C in the case of full-color copying.
For normal mono-color copying, controlled to 163°C; for 3 hr from the start, controlled to 168°C.
*3: For 3 hr from the start, controlled to 163°C; for others, controlled to 158°C.

Figure 8-301

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B. Protective Functions

The copier is equipped with the following six protective mechanisms to prevent malfunction of the fixing heater:

a. The DC-CPU monitors the voltage of the thermistor (THM1, THM3). When it detects 210°C or more, the copier will indicate 'E000' on the control panel, generate SHUTOFF* signal, and turn off the main switch (SW1).
b. If the copier detects that the SSR is on (USSRD or LSSRD=1) in the absence of the heater drive signal from the DC-CPU, the copier will indicate 'E000' on the control panel, and will cut off the power to the fixing heater.
c. If the gate array detects that the difference in thermistor voltage between THM1 and THM2 (upper thermistors) or between THM3 and THM4 (lower thermistors) is about 1.6 V (about 50°C) or more, the copier will indicate 'E000' on the control panel, and will cut off the power to the fixing heater.
d. If the gate array detects that the voltage of any of the four thermistors (THM1, THM2, THM3, THM4) is about 1.0 V (about 220°C) or more, 'E000' will be indicated on the control panel and, thereafter, the power to the fixing heater will be cut.
e. If the SSR is on (USSRD or LSSRD=1) in the absence of heater drive signal from the DC-CPU, the copier will indicate 'E004' on the control panel, and will cut off the power to the fixing heater.
f. If the internal temperature of the fixing thermal switch (TP2, TP3) of the upper roller or the lower roller exceeds about 220°C, the copier will turn off the respective thermal switch and the power to the fixing heater.

Caution:
Once open, the contact of a thermal switch will not close (even after recovery to normal temperature). Do not use a thermal switch whose contact has opened once.

Resetting E000/E004/E008

1) Remove the cause.
2) Start service mode, and select FUNCTION>CLEAR>ERROR.
3) Press the OK key.
4) End service mode, and turn off and then on the power switch.

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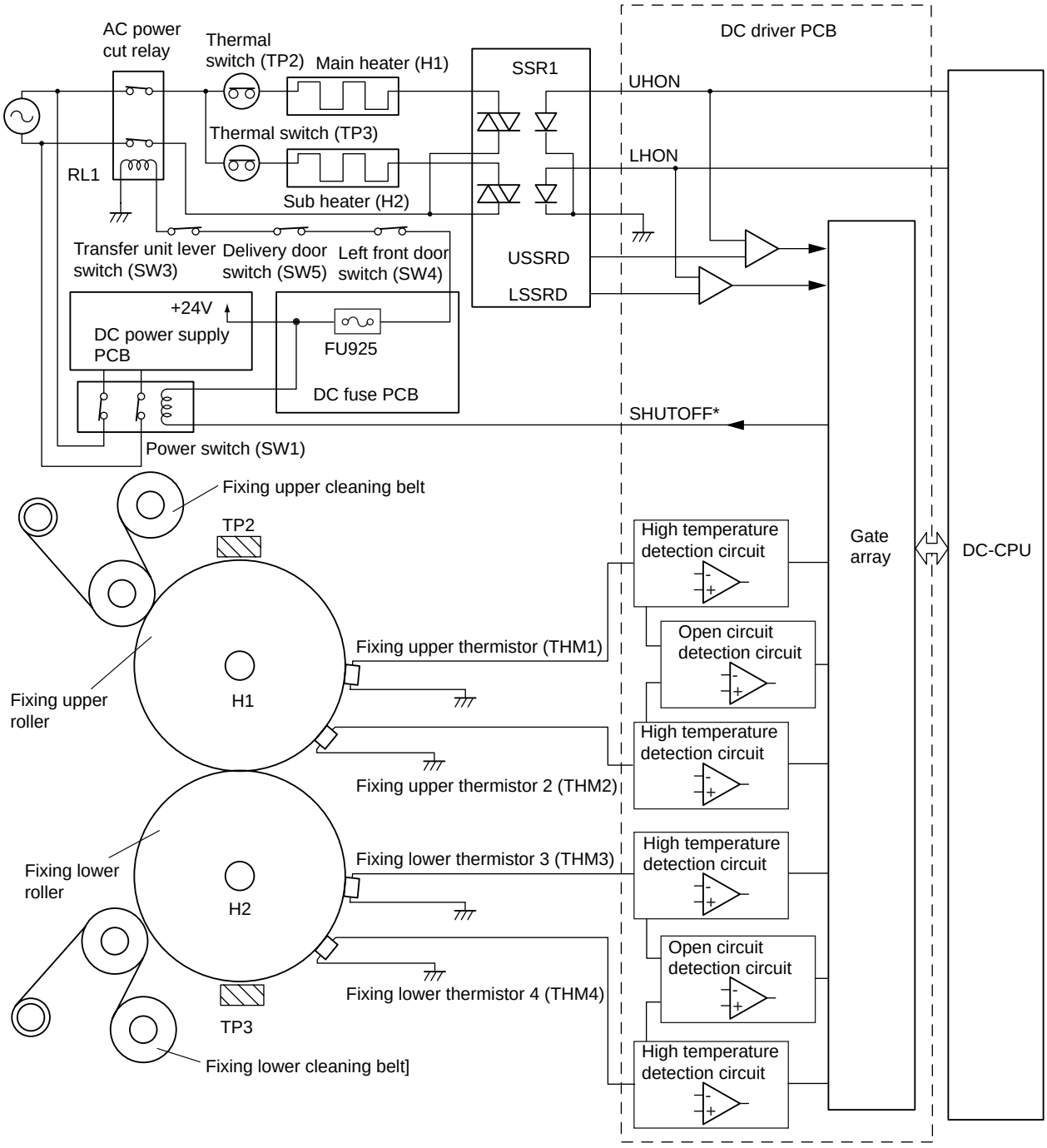

Figure 8-302

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IV. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (**Do not insert a screwdriver or the like into the laser path.**)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum. The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Fixing Assembly

1. Removing the Fixing Assembly

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer drum frame.
4) Grasp the front and rear handles of the fixing assembly, and lift it to detach.

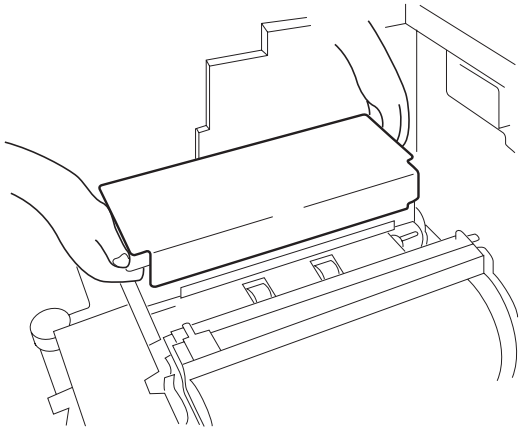

Figure 8-401

2. Opening the Fixing Upper Roller Unit

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer drum frame.
4) Remove the two screws [1], and detach detection fixing upper cover [2].

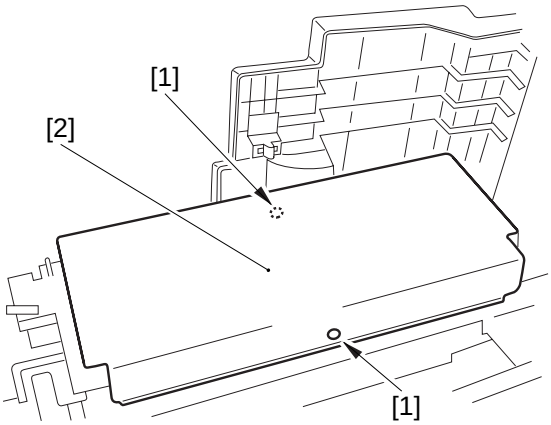

Figure 8-402

5) Open the inside delivery assembly (fixing delivery assembly).
6) While keeping the joint of the screw [3] in place with radio pliers to prevent shaving of each screw, remove the two screws [3], and detach the fixing upper roller unit [4].

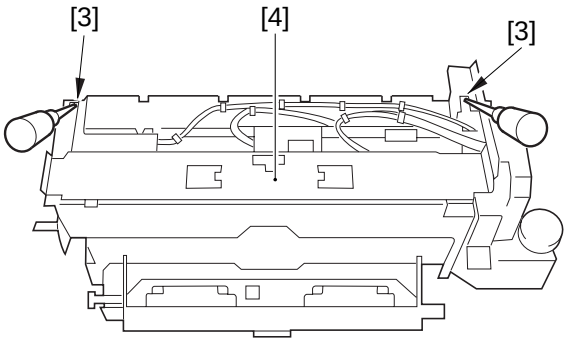

Figure 8-403

Caution:

When closing the fixing upper roller unit, try lifting the oil applying felt slightly with your finger. At that time, take care so that the oil pipe will not slide out of the groove.

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3. Removing the Fixing Upper Heater

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer drum frame.
4) Pull out the faston [1] at the rear of the fixing upper heater.

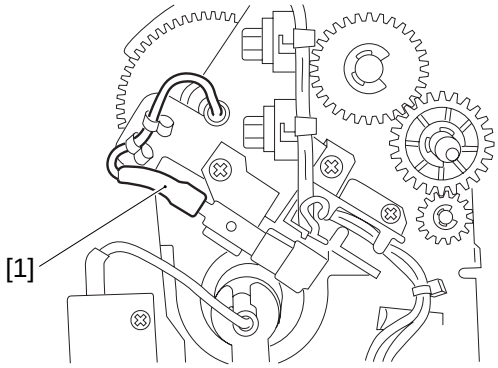

Figure 8-404

5) Pull out the faston [2] at the front of the fixing upper heater, and remove the screw [3]; then, remove the metal fixing [4].
6) Slide out the fixing upper heater to the front.

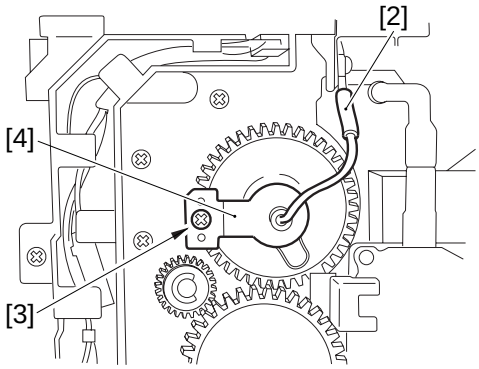

Figure 8-405

4. Removing the Fixing Upper Roller

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer drum frame.
4) Remove the fixing assembly.
5) Remove the fixing upper heater.
6) Open the fixing upper roller unit, and remove the screw [1]; then, detach the harness guide [2].

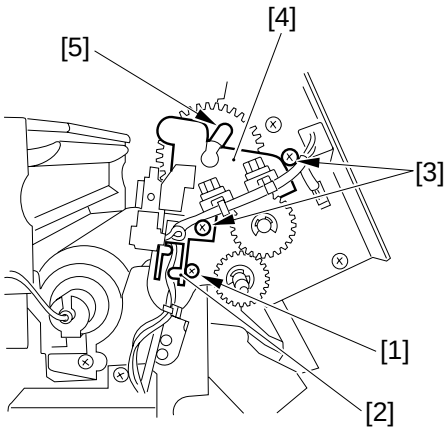

Figure 8-406 (rear)

7) Remove the two screws [3], and shift the heater support plate (rear) [4]; then, remove the fixing upper roller metal fixing [5] (one each at front and rear).

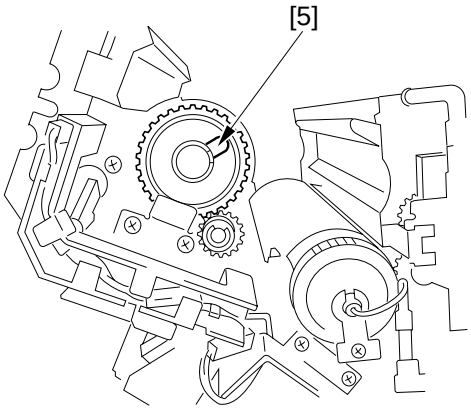

Figure 8-407 (front)

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8) Shift the bearing [6] (front, rear) of the fixing upper roller, and pull out the fixing upper roller [7] as shown.

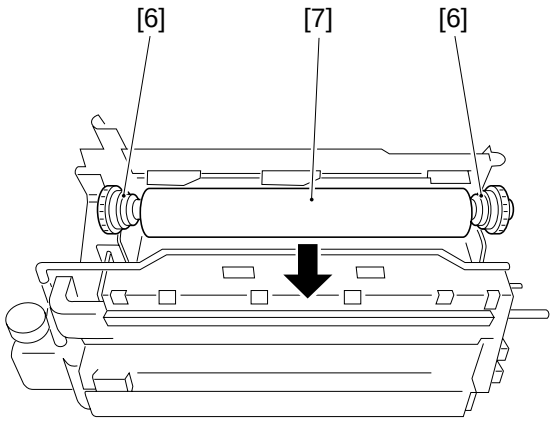

Figure 8-408

5. Removing the Fixing Lower Heater

1) Open the front cover.
2) Remove the transfer drum frame cover and the fixing cover.
3) Slide out the transfer drum frame.
4) Pull out the faston [1] at the rear of the fixing lower heater.

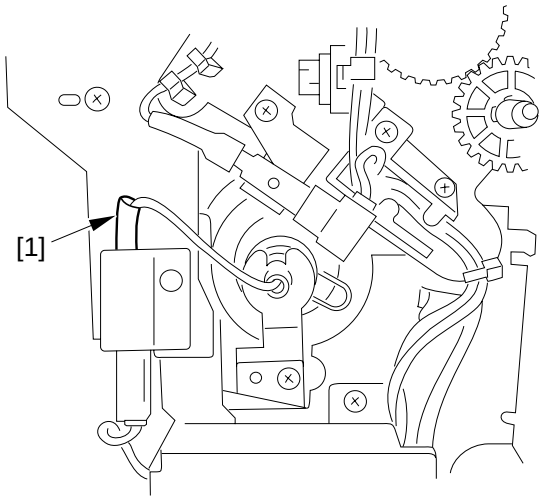

Figure 8-409

5) Pull out the faston [2] at the front of the fixing lower heater, and remove the screw [3]; then, detach the metal fixing [4].
6) Pull out the fixing lower heater to the front.

Caution:
Mount the heater so that the cable at the front is white and the cable at the rear is black.

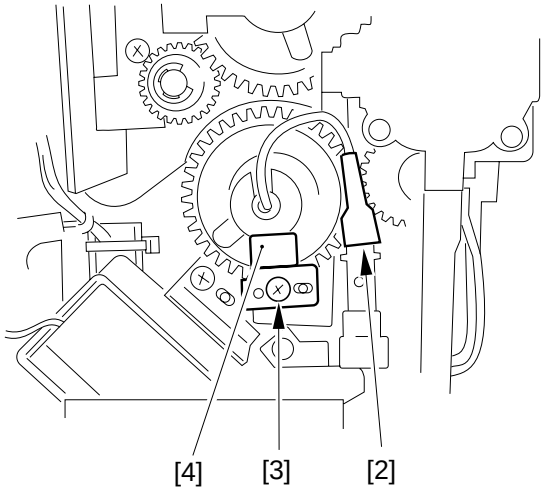

Figure 8-410

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6. Removing the Fixing Lower Roller

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer drum frame.
4) Remove the fixing assembly unit.
5) Remove the screw [1], and slide the fixing inlet guide [2] to the rear to detach.

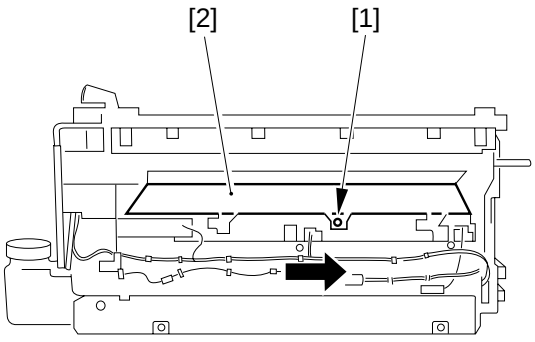

Figure 8-411

6) Remove the fixing lower heater.
7) Open the fixing upper roller unit.
8) Remove the screw [3], and shift the heater faston base [4].

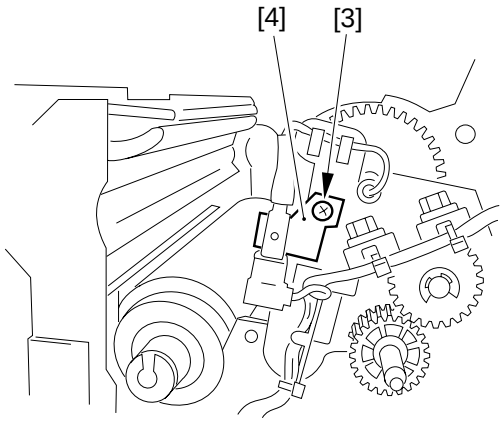

Figure 8-412

9) Pull out the fixing lower roller as shown.

Caution:
When mounting the fixing lower roller, take care so that it will not be damaged by the thermistor.

10) Remove the metal fixing from the fixing lower roller; then, detach the gear, bearing, and heat-insulating bush.

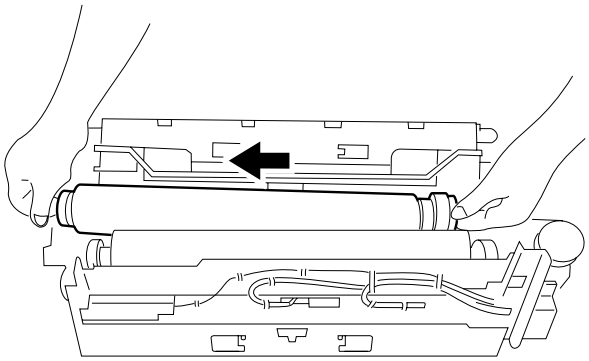

Figure 8-413

7. Difference among Fixing Rollers (upper/lower, front/rear)

- Front of the Roller
  The fixing upper roller has the shorter U-shaped cut off [1]. The fixing lower roller [2] has the longer cut-off.
- Rear of the Roller
  The fixing upper roller has a D-cut [3]. The fixing lower roller does not have any special marking.

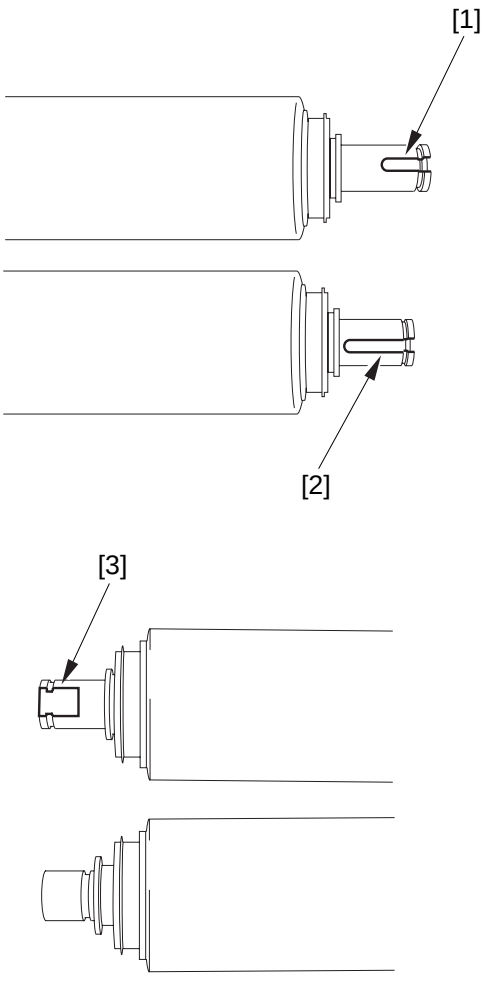

Figure 8-414

Caution:
Take care. The gear [1] used for each roller has its own orientation.

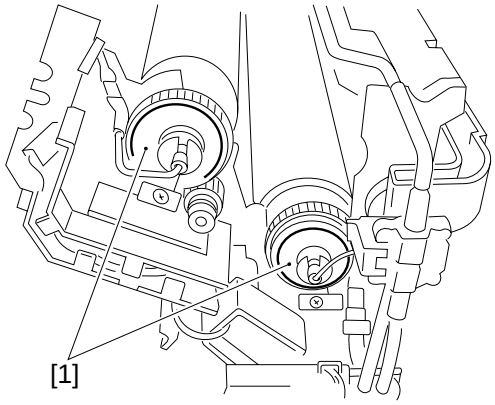

Figure 8-415

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8. Removing the Fixing Upper Thermistor

1) Open the front cover.
2) Slide out the transfer drum frame.
3) Remove the two screws, and detach the fixing upper cover.
4) Remove the screw [1] (one each), and remove the fixing upper thermistor.

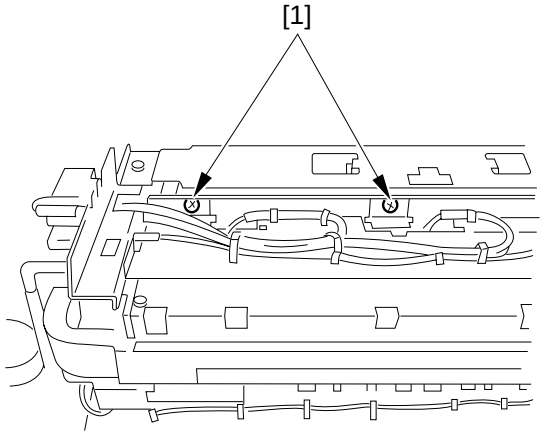

Figure 8-416

9. Removing the Fixing Lower Thermistor

1) Open the front cover.
2) Remove the transfer drum frame cover and the fixing cover.
3) Slide out the transfer drum frame.
4) Remove the fixing assembly unit.
5) Disconnect each connector [1], and remove the screw [2]; then, detach the fixing lower thermistor.

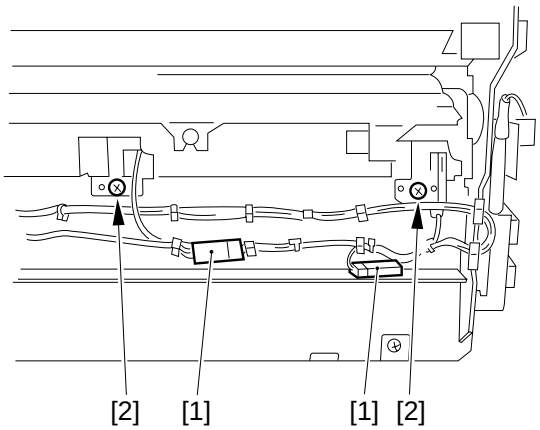

Figure 8-417

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10. Removing the Fixing Thermal Switch (lower)

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer drum frame.
4) Remove the fixing unit.
5) Remove the two screws [1], and remove the cable of the thermal switch; then, remove the screw [2], and detach the fixing lower thermal switch.

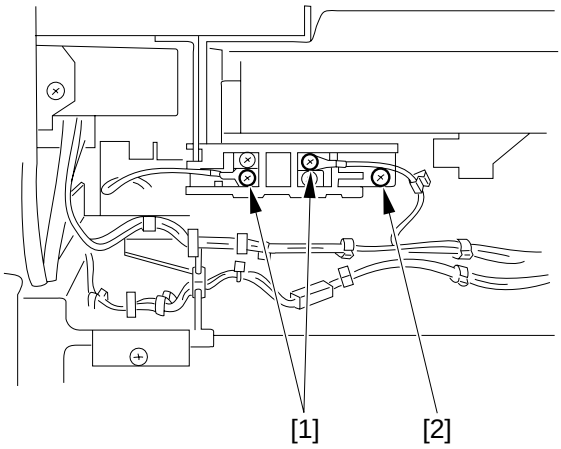

Figure 8-418

11. Removing the Fixing Thermal Switch (upper)

1) Open the front cover.
2) Slide out the transfer drum frame.
3) Remove the two screws, and detach the fixing upper cover.
4) Remove the cleaning belt unit.
5) Remove the two screws [1], and remove the cable of the thermal switch; then, remove the screw [2], and detach the thermistor together with its mounting base.

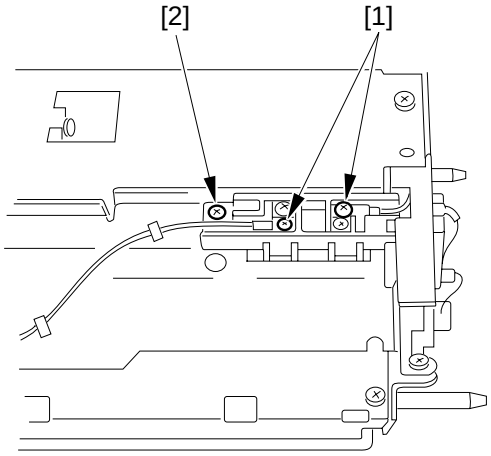

Figure 8-419

12. Adjusting the Fixing Nip

- Measuring the Nip Width
  If the roller is not hot, wait until the standby period ends, wait another 15 min, and make 20 copies before starting the work:
- Taking Measurements

1) Start service mode.
2) Execute FUNCTION>FUSER>NIP-CHK.

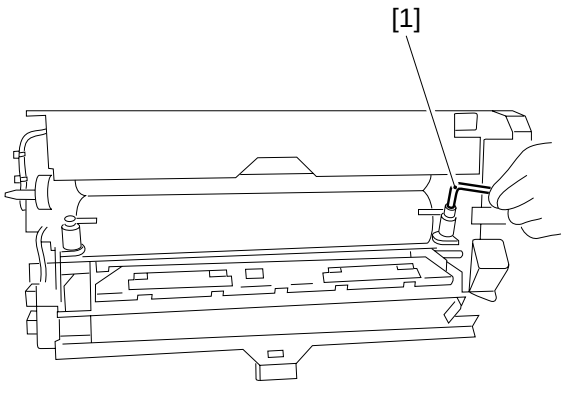

Figure 8-420

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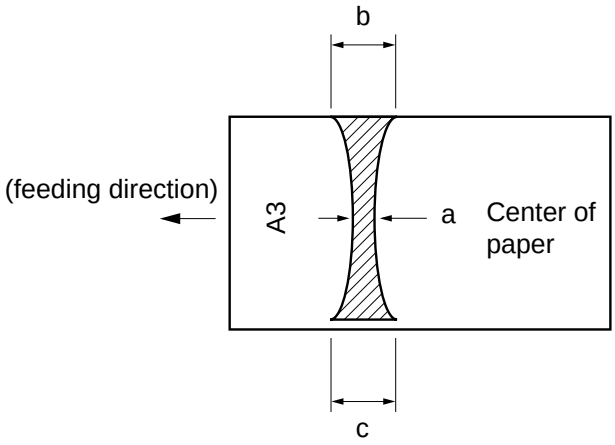
· The nip width is correct if as indicated in the table. Otherwise, turn the adjusting nut [1] to make adjustments.

Caution:
b and c are points 10 to 15 mm from the edges of paper.



Dimension	Standard*
a	7.3 ± 0.5 mm
| b-c |	0.5 mm or less
b-a c-a	0.5 mm or less

*Make sure both upper and lower rollers are adequately heated.

Table 8-421

B. Fixing Cleaner Assembly

1. Removing the Fixing Upper Cleaning Belt

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer drum frame.
4) Remove the two screws, and detach the fixing upper cover.
5) Remove the two screws [1], and detach the fixing upper cleaner assembly [2].

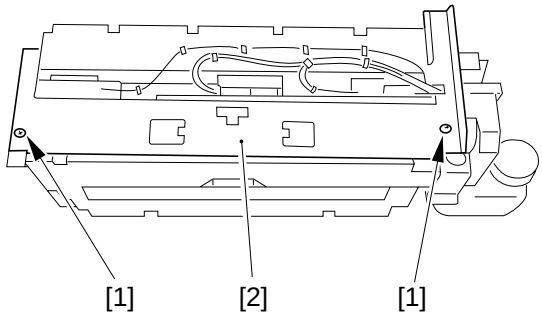


Figure 8-422

6) Remove the two screws [3], and remove the two bushings [4]; then, detach the fixing upper cleaning belt.

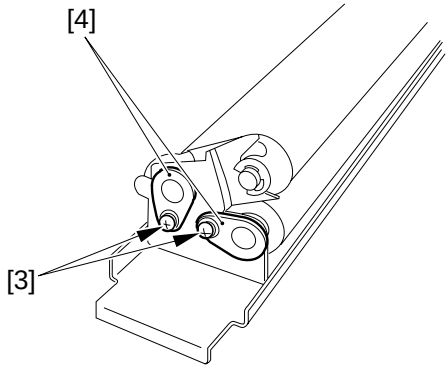


Figure 8-423

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2. Mounting the Fixing Upper Cleaning Belt

The feed shaft, take-up shaft, and belt (service part) are constructed as a single entity (service part).

Mount the fixing upper cleaning belt by reversing the steps used to remove it with the following in mind:

1) Wind the cleaning belt around the cleaning belt take-up shaft [1] two to three times.
2) Mount the feed shaft [2] of the cleaning belt as shown.
3) Put the lever [3] of the fixing upper cleaning belt length sensor inside.
4) Mount the take-up shaft of the cleaning belt as shown.

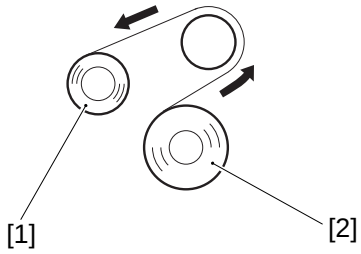

Figure 8-424 (rear view)

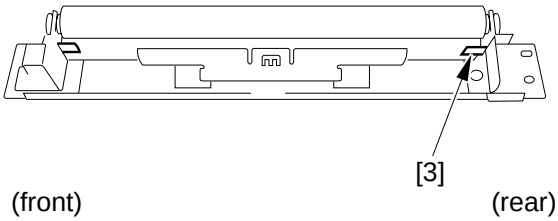

Figure 8-425

5) Operate the cleaning belt feed lever [4] 10 to 20 times to remove all slack.

Caution:

The cleaning belt can become slack when you release the upper roller unit during servicing work. At the end of each servicing job, be sure to operate the cleaning belt drive assembly 10 to 20 times by hand to remove the slack.

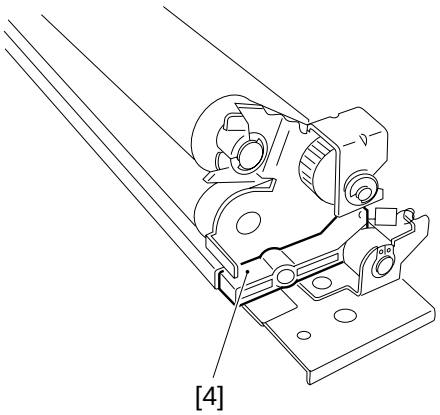

Figure 8-426

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3. Removing the Fixing Lower Cleaning Belt

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer frame.
4) Detach the fixing unit.
5) Disconnect the connector [1], and remove the two screws [2]; then, detach the fixing left cover.

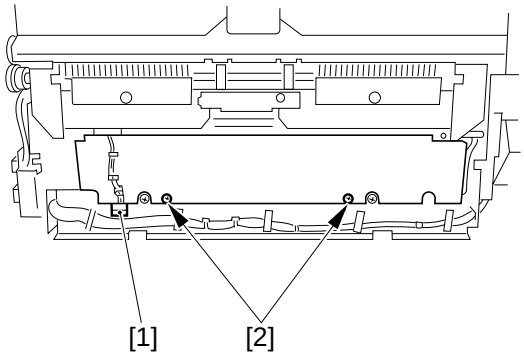

Figure 8-427

6) Disconnect the two connectors [3], and remove the two screws [4]; then, remove the fixing lower cleaning belt unit.

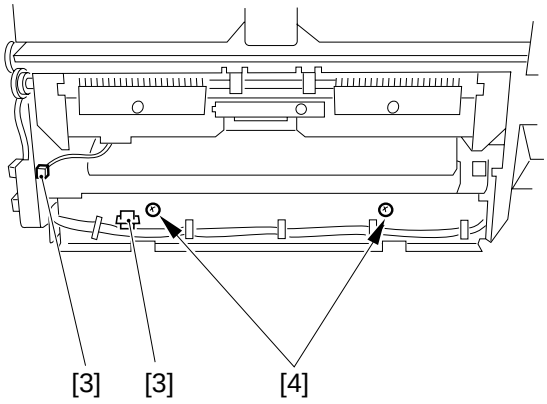

Figure 8-428

7) Remove the two screws [5], and remove the two bushings [6]; then, detach the fixing lower cleaning belt.

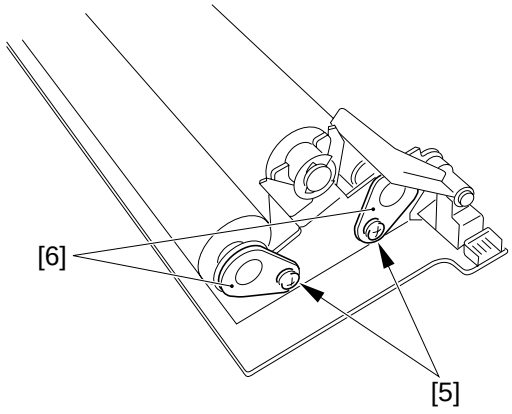

Figure 8-429

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4. Mounting the Fixing Lower Cleaning Belt

The feed shaft, take-up shaft, and cleaning belt (service part) are constructed as a single entity (service part).

Mount the fixing lower cleaning belt by reversing the steps used to remove it and with the following mind:

1) Wind the cleaning belt around the cleaning belt take-up shaft [1] two to three times.
2) Mount the cleaning belt feed shaft [2] as shown.
3) Mount the take-up shaft so that the lever [3] of the fixing lower belt length sensor is on top of the cleaning belt.
4) Mount the take-up shaft of the cleaning belt as shown.
5) Operate the cleaning belt feed lever [4] 10 to 20 times to remove the slack of the cleaning belt completely.

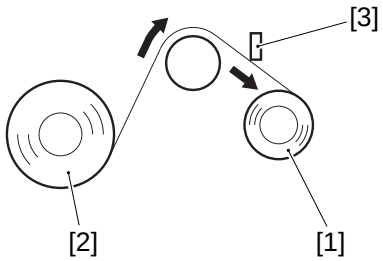

Figure 8-430 (rear view)

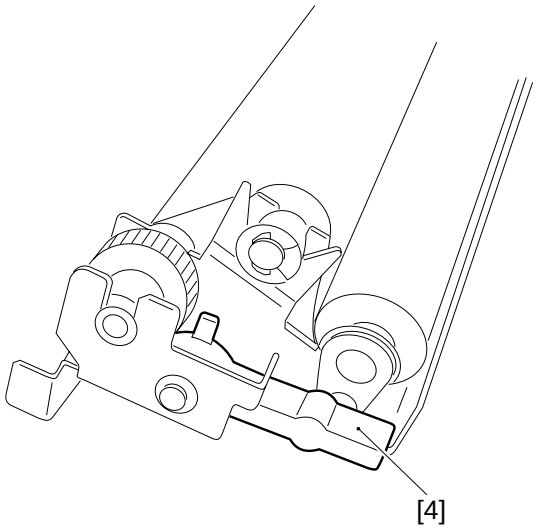

Figure 8-431

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C. Oil Applying Assembly/ Removing Assembly

Caution:

The oil applying unit is adjusted and assembled at the factory. Do not remove it. Especially, do not remove the screws [1] shown in the figure.

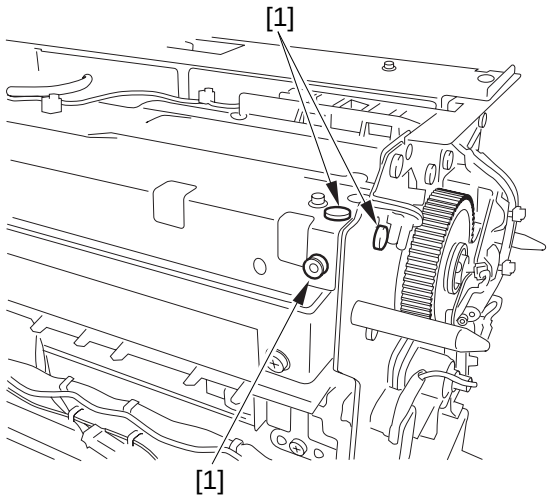

Figure 8-432 (rear)

Reference:

If you have replaced the oil felt, execute COPIER>OPTION>FIXING>PUMP-ON in service mode, and press the Stop key in about 10 min so as to impregnate the felt with fixing oil.

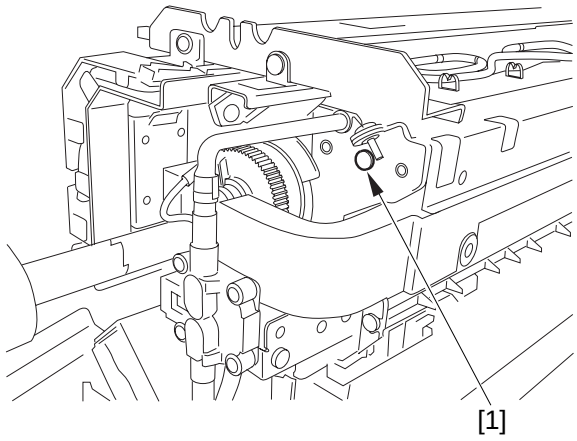

Figure 8-433 (front)

1. Removing the Oil Applying Felt

1) Open the front cover.
2) Remove the fixing cover.
3) Slide out the transfer frame.
4) Remove the fixing upper cover.
5) Open the fixing upper roll unit.
6) Shift the oil applying felt shaft [1] to the left, and remove the oil felt [2].

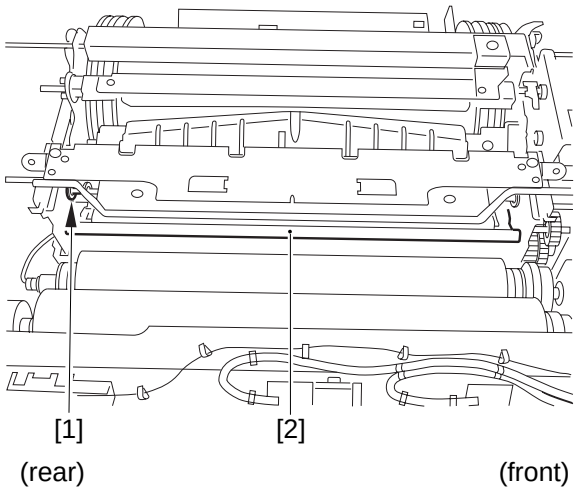

Figure 8-434

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2. Removing the Oil Fixing Blade

1) Open the front cover.
2) Remove the fixing cover.
3) Slide to the transfer drum frame.
4) Remove the fixing upper cover, and open the fixing upper roller unit.
5) Remove the oil applying felt.
6) Remove the four screws [1], and remove the fixing blade.

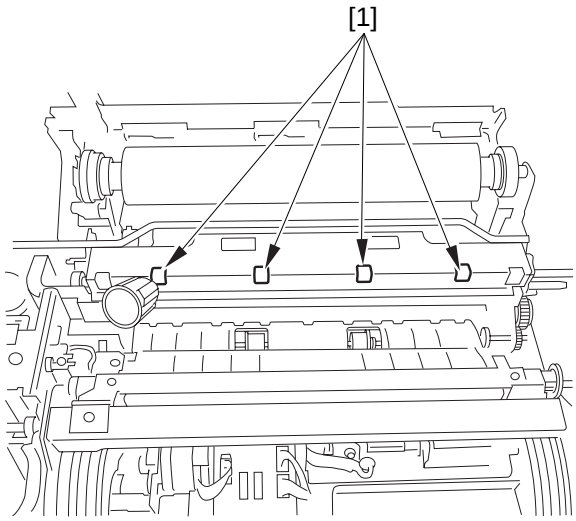

Figure 8-435

Reference:

The oil felt is symmetrical in shape when viewed from above. You may turn it over to use the other side.

D. Internal Delivery Assembly

1. Removing the Fixing Separation Claw

1) Open the front cover.
2) Remove the fixing cover.
3) Remove the two flat-head screws [1], and remove the separation claw meal fixing [2].

Caution:

Take care not to lose the claw spring.

4) Remove the four fixing separation claws.

Caution:

Replace the claw spring in the same way.

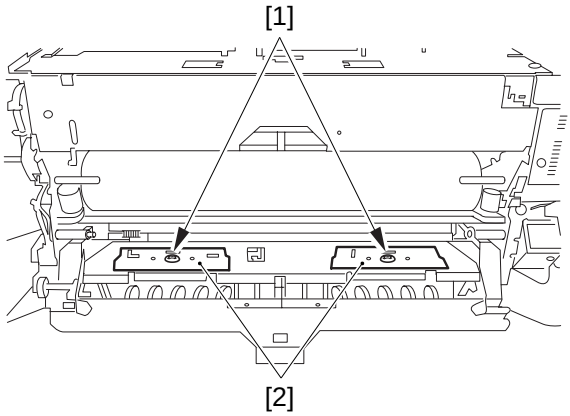

Figure 8-436

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E. Drive Assembly

1. Removing the Fixing Motor (M5)

1) Remove the rear cover.
2) Remove the screw, and open the CPU PCB.
3) Remove the fixing motor cover. (Pull it to the front while opening it upward and downward.)
4) Loosen the two screws [1].
5) Disconnect the two connectors [2], and remove the two screws [3]; then, detach the fixing motor together with its PCB.

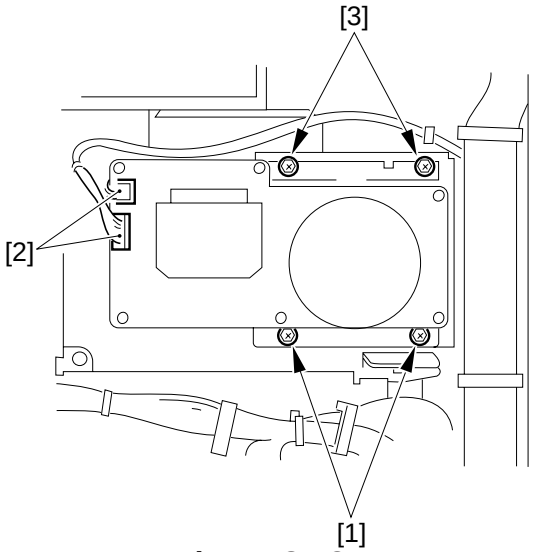

Figure 8-437

2. Points to Note When Replacing the Oil Pump

The oil pump may be replaced without any adjustment. However, be sure to keep a paper rag or the like against it to stop oil pouring out when the tube is removed.

3. Adjusting the Fixing Upper/Lower Solenoid

Make adjustments so that the stroke [A] of the solenoid is 4 ±0.2 mm.

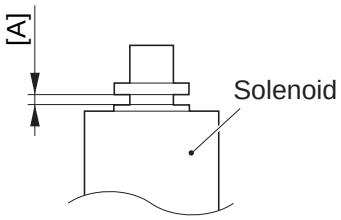

Figure 8-438

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CHAPTER 9

EXTERNALS / AUXILIARY MECAHANISMS

This chapter explains the operations and functions of the copier's externals and control systems and the relationship between the electrical and mechanical systems, and provides an outline of the timing at which various associated parts are driven.

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I. CONTROL PANEL

A. Outline

The copier's control panel consists of the PCBs shown in the figure and a liquid crystal display (LCD) capable of showing images in 640 x 240 dots.

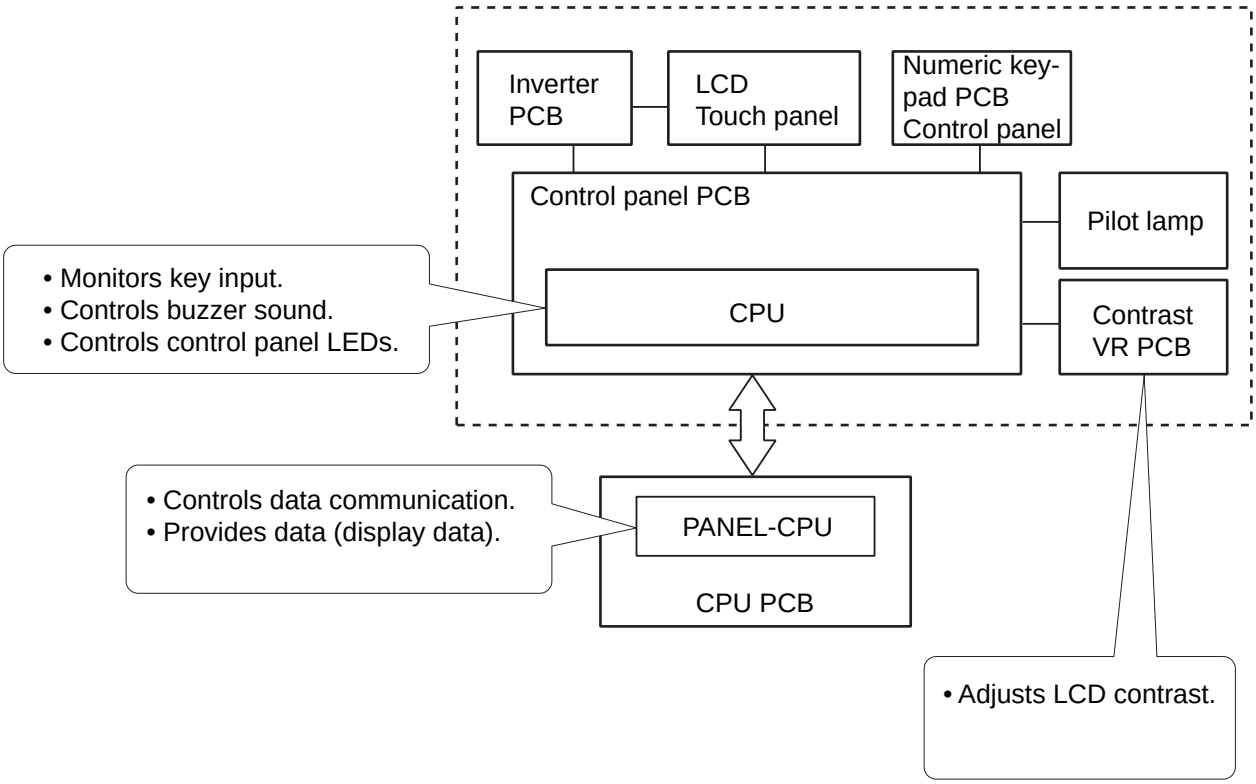

Figure 9-101 Functional Construction

Related Service Mode

COPIER>FUNCTION>PANEL>LCD-CHK	Use it to check the LCD for missing dots.
COPIER>FUNCTION>PANEL>LED-CHK	Use it to start a check on control panel LEDs.
COPIER>FUNCTION>PANEL>LED-OFF	Use it to end a check on control panel LEDs.
COPIER>FUNCTION>PANEL>KEY-CHK	Use it to start a check on key input.
COPIER>FUNCTION>PANEL>TOUCHCHK	Use it to adjust the touch panel coordinates.

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II. DOWNLOADING

A. Outline

The copier will provide the following functions when it is connected to a PC with a bi-Centronics interface.

PCB		Download	Upload
CPU PCB	R flash memory	Yes	No
	R back-up RAM	Yes	Yes
	DC flash memory	Yes	No
	DC back-up RAM	Yes	Yes
	PANEL flash memory	Yes	No
	PANEL back-up RAM	Yes	Yes

Table 9-201

The copier is switched between copying and downloading/uploading modes by the switch behind its inside cover.

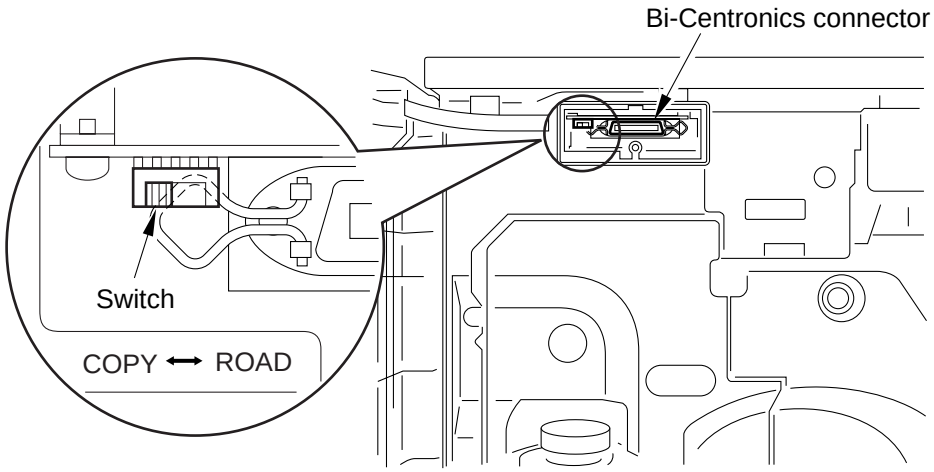

Figure 9-201

Switch position	Copier operation	Remarks
LOAD	Downloading/uploading	Disables copying operation.
COPY	Copying	

Table 9-202

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III. COUNTERS

A. Outline

The copier is equipped with counters which keep track of the number of copies it has made according to the type of copy paper.

The counters appear in response to a press on the Check key on the control panel (from the top, counter 1, 2, 3, and so forth). The count is incremented upon detection of copy paper by the internal paper sensor (PS12; in the case of the Control Card V, by the pickup request signal from the reader unit).

Table 9-301 shows the particulars of the counters according to voltage models.

Model	Counter 1	Counter 2	Counter 3	Counter 4	Counter 5	Counter 6
100V(*1)	Tl (total)	Bk (C+P)	4C+Mn (C)	4C+Mn (P)	None (Note)	None (Note)
120V(*2)	Tl (total)	Bk (C+P)	4C+Mn (C/L)	4C+Mn (C/Sm)	Mn (C+P)	Note
120V(*3)	Tl (total)	Bk (C+P)	4C+Mn (C/L)	4C+Mn (C/Sm)	4C+Mn (P/L)	4C+Mn (P/Sm)
230V(*4)	Tl (total)	Bk (C+P)	4C+Mn (C/L)	4C+Mn (C/Sm)	Mn (C+P)	Double-sided total
240V(*5)	Tl (total)	4C+Mn (C/L)	4C+Mn (C/Sm)	All (C+P/Sm)	Bk (C+P/L)	Bk (C+P/Sm)
240V(*6)	Tl (total)	Bk (C+P)	4C+Mn (C/L)	4C+Mn (C/Sm)	4C+Mn (P/L)	4C+Mn (P/Sm)
230V(*7)	Tl (total)	4C+Mn (C/L)	4C+Mn (C/Sm)	All (C+P/Sm)	Bk (C+P/L)	Bk (C+P/Sm)
230V(*8)	Tl (total)	4C+Mn (C/L)	4C+Mn (C/Sm)	Bk (C+P/L)	Bk (C+P/Sm)	CopyScanTTL
230V(*9)	Tl (total)	Bk (C+P)	4C+Mn (C/L)	4C+Mn (C/Sm)	4C+Mn (P/L)	4C+Mn (P/Sm)
230V(*10)	Tl (total)	Bk (C+P)	4C+Mn (C/L)	4C+Mn (C/Sm)	4C+Mn (P/L)	4C+Mn (P/Sm)

Legend:
C: copying operation. P: printing operation.
Copy Scan TTL: total of original scans (in the case of full-color copying, count increment x 4).
4C: full-color (count increment x 1).
Mn: mono-color (count increment x 1).
Bk: black.
All: all, i.e., 4C, Mn, and Bk.
L: large-size paper (364 mm or longer in feeding direction; count increment x 1).
Sm: small-size paper (364 mm or less in feeding direction).
Tl: count increment x 1 for All (C+P).
D-S: double-sided (in auto duplexing mode; count increment x 1).
Note: Different counter mode settings may be selected in service mode (applies to all counters for the 120-/230-V model).

Order numbers
*1:F13-5311/-5411 *2:F13-5201 *3:F13-5231/-5311 *4:F13-5241/-5341/-5441
*5:F13-5351/-5451 *6:F13-5261/-5361/-5461 *7:F13-5271/-5371/-5471
*8:F13-5381/-5481 *9:F13-5291/-5391/-5491 *10:F13-5321/-5421

Table 9-301

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IV. FANS

A. Outline

The names, the functions, and associated error codes of the fans used in the copier are as follows:

Notation	Name	Function	2-speed control (voltage)	Error code
FM1	Original exposure system cooling fan 1	Cools the original exposure system.	Yes (24/15V)	E804-0101
FM2	Exhaust fan	Discharges heat from inside.	Yes (24/15V)	E804-0003
FM3	Primary charging assembly fan	Prevents soiling of the primary charging assembly.	Yes (24/15V)	E804-0008
FM4	Laser scanner motor cooling fan	Cools the motor.	No (24V)	E804-0006
FM5	Ozone suction fan	Prevents soiling of the primary charging assembly	No (24V)	E804-0004
FM6	Toner suction fan	Prevents stray toner.	No (24V)	E804-0005
FM7	IP cooling fan	Cools the IP PCB.	Yes (24/15V)	E804-0002
FM8	Electric unit cooling fan	Cools the AP PCB.	Yes (24/15V)	E804-0001
FM9	Power supply cooling fan 1	Cools the power supply.	No (24V)	E804-000B
FM11	Delivery cooling fan	Cools the delivery assembly, and assists feeding.	No (24V)	E804-0009
FM13	Power supply cooling fan 2	Cools the power supply.	No (24V)	E804-000B
FM14	Original exposure system cooling fan 2	Cools the original exposure system.	Yes (24/15V)	E804-0102
FM15	Original exposure system cooling fan 3	Cools the original expose system.	Yes (24/15V)	E804-0102
FM16	Back suction fan	Cools CVR.	No (24V)	E804-000A
FM17	Power supply cord mount fan	Cools the power supply base.	No (24V)	E804-000C

IP: image processor. AP: analog processor. CVR: lamp regulator.

Table 9-401 Functions

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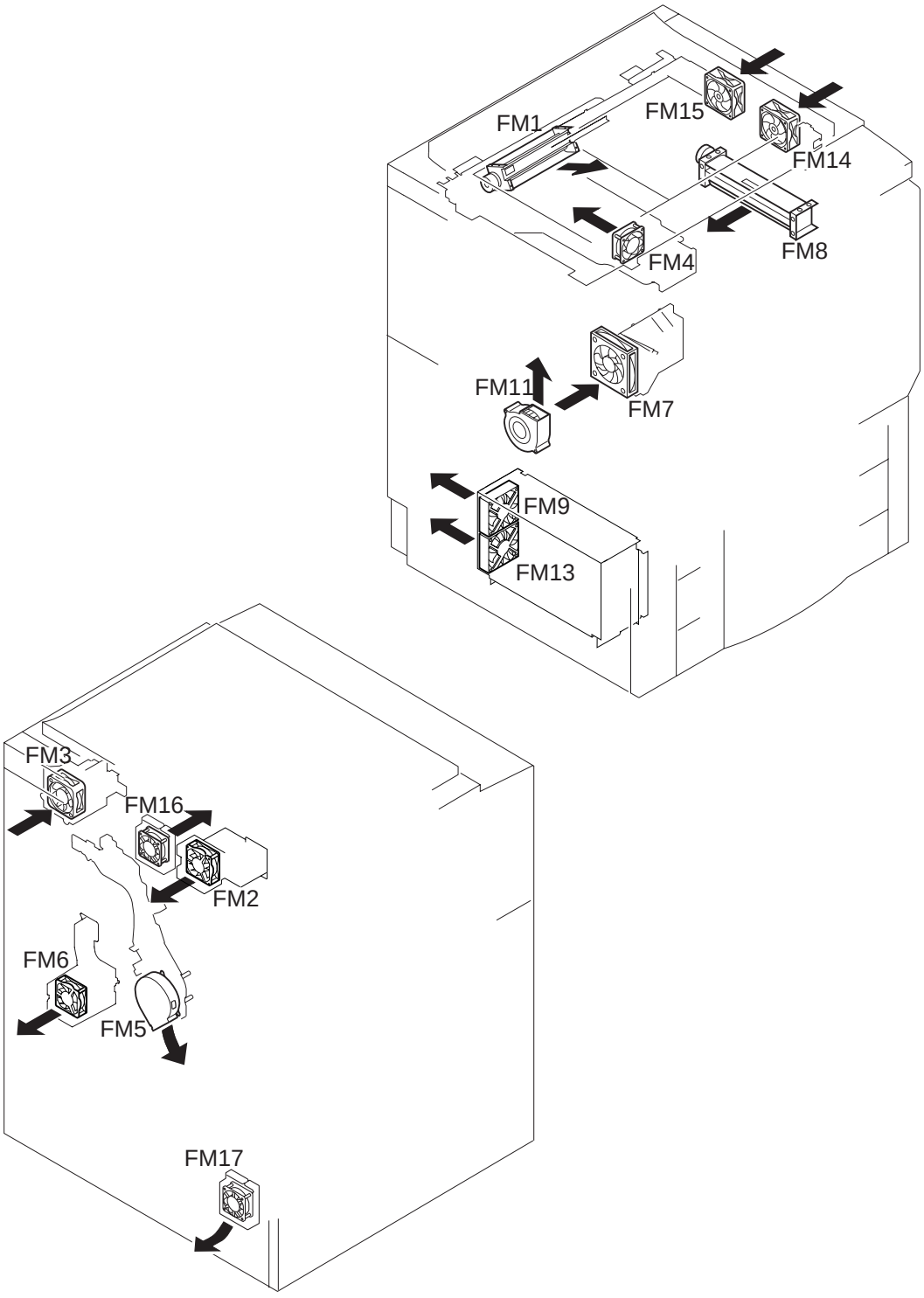

Figure 9-401 Arrangement of the Fans

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B. Operations

1. 2-Speed Rotation Control

The rotation of some of the fans used in the copier is controlled so that they operate at full speed (24 V) or half speed (15 V) in response to a switch of voltage by the voltage switching circuit of the respective fan. (Table 9-401)

If an error occurs in the rotation of a fan, the copier indicates 'E804' on the control panel. To reset the copier, remove the cause, and turn on the power switch. (Table 9-401)

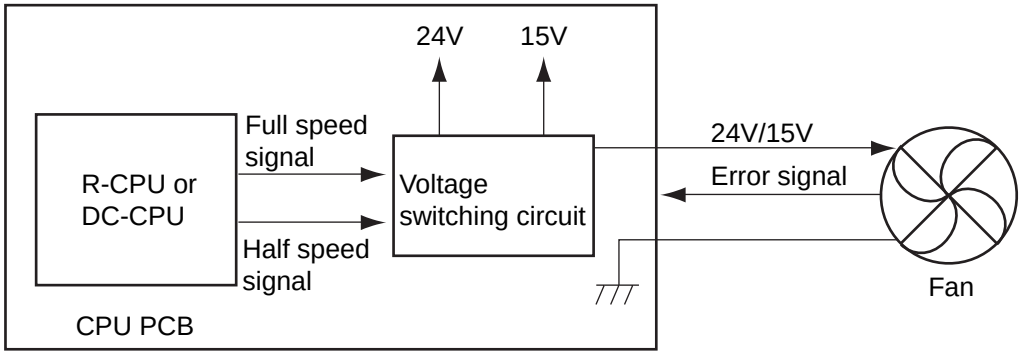

Figure 9-402

2. Sequence of Operations

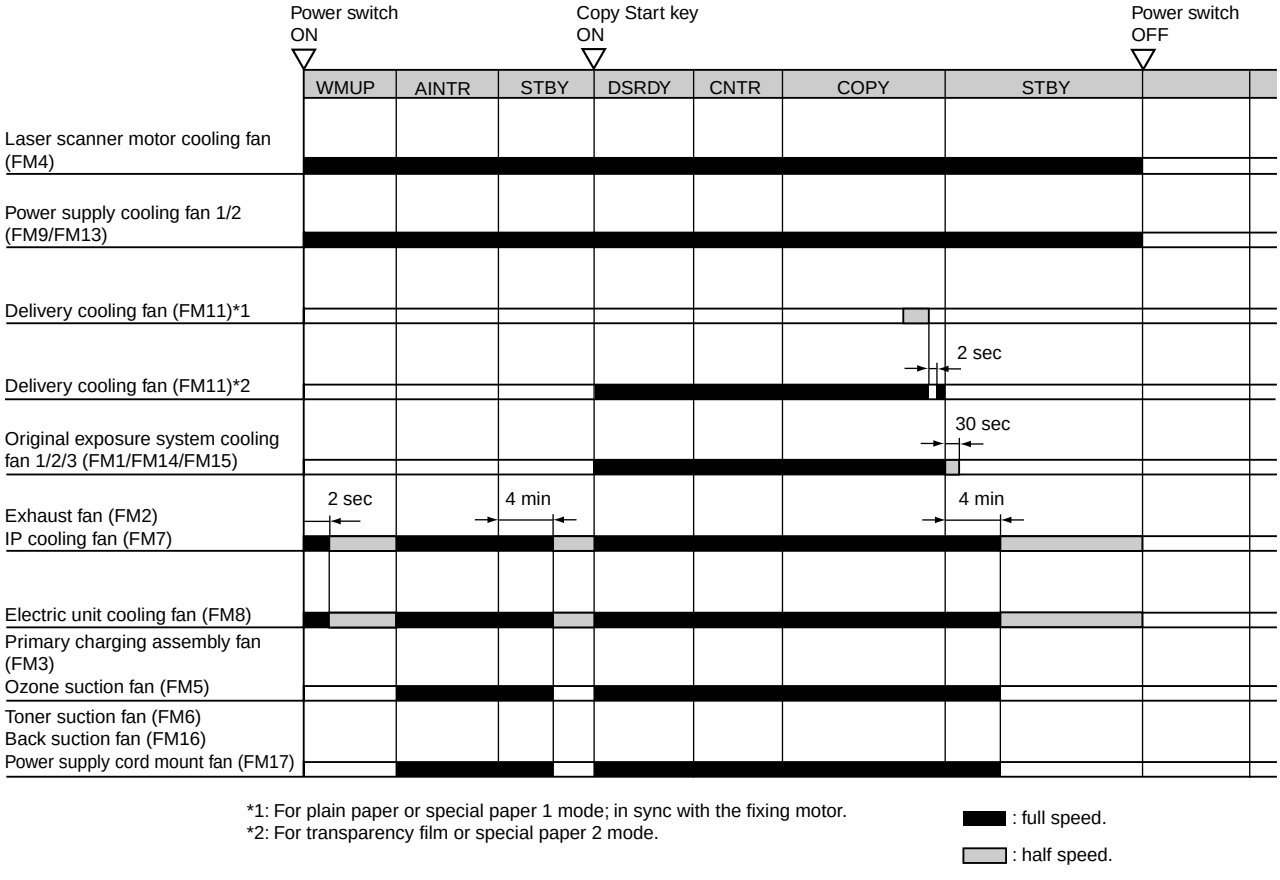

Figure 9-403

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V. POWER SUPPLY

A. Supplying Power

1. Outline

The copier is supplied with DC power by the DC power supply PCB, and the power is distributed as shown in Figure 9-501.

Name	Description
DC power supply PCB (DCP1)	Generates DC power from AC power, and protects against overcurrent.
AC fuse PCB (UN22)	Protects the drum heater, cassette heater, and deck heater from overcurrent.
DC fuse PCB (UN29)	Protects the DC power supply system from overcurrent.
AC power cut relay (RL1)	Cuts off the AC power system for the original scanning lamp, fixing heater, fixing oil pump, and the like. Operates in conjunction with the transfer unit lever switch (SW3), left front door switch (SW4), and delivery door switch (SW5; CLC1150 only).
DC power cut relay (RL3)	Cuts off DC power (+15, +24, +38 V). Operates in conjunction with the transfer unit lever switch (SW3), left front door switch (SW4), and delivery door switch (SW5; CLC1150 only).
Power switch (SW1)	Serves as a power switch for loads other than the drum heater, cassette, heater, and deck heater. Turns off automatically when the auto shut-off signal (SHUTOFF*) goes '0'.
Environment switch (SW6)	When set to off, the drum heater, cassette heater, and deck heater operate in conjunction with the power switch.
Cassette heater switch (SW8)	Turns on and off the cassette heater and the deck heater.
Leakage breaker (ELCB)	Cuts off the AC power in response to electrical leakage in the copier, turning off all power supplies.

Figure 9-501 Functions

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2. Distribution of Power among Switches

Table 9-502 shows how the copier's power is distributed to various loads in relation to its switches:

Control side					Load side				
Leakage breaker	Main switch	Environment switch	Door switch	Cassette heater switch	Drum heater	Cassette heater	DC power supply	AC relay	DC relay
OFF	--	--	--	--	OFF	OFF	OFF	OFF	OFF
ON	OFF	OFF	--	OFF	OFF	OFF	OFF	OFF	OFF
ON	OFF	ON	--	ON	ON	OFF	OFF	OFF	OFF
ON	OFF	ON	--	OFF	ON	ON	OFF	OFF	OFF
ON	ON	ON	Open	ON	ON	OFF	ON	OFF	OFF
ON	ON	ON	Open	ON	OFF	ON	ON	OFF	OFF
ON	ON	ON	Close		ON	ON	ON	ON	ON

Door switch: transfer unit lever switch (SW3), left front door switch (SW4), and delivery door switch (SW5; CLC1150 only).
AC relay: AC power cut relay (RL1).
DC relay: DC power cut relay (RL3).

Table 9-502

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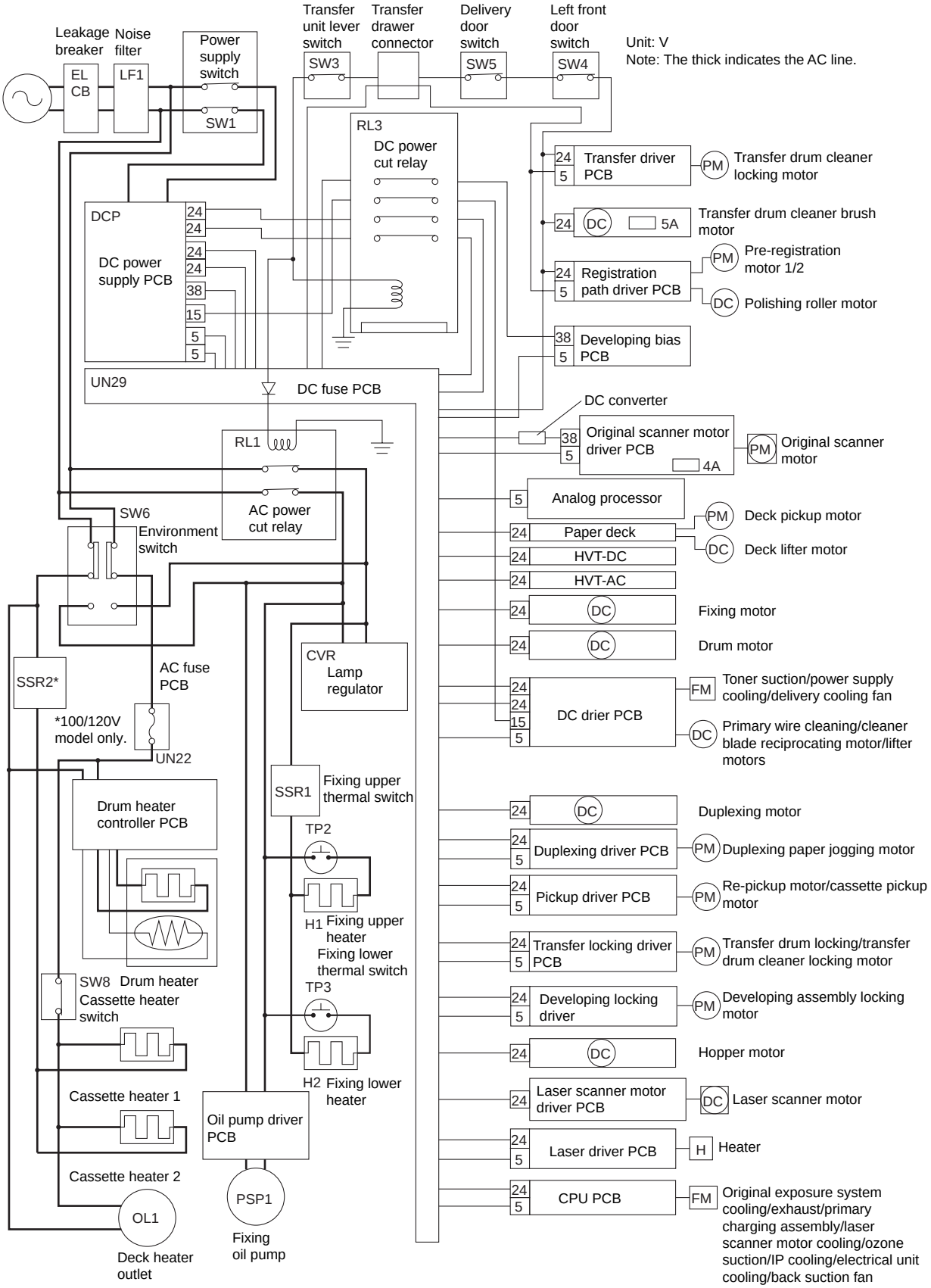

Figure 9-501 Block Diagram of the Power Supply System

B. Rated Outputs of the DC Power Supply PCB

Table 9-503 shows the rated outputs of the DC power supply PCB and related power tolerances.

Output	3.3V	5V	-8V	+8V	+8VU
Connector	J1704-3	J1706-1 J1706-2	J1705-7	J1705-5	J1705-3
Power supply tolerance	±5%	±4%	±10%	±10%	±10%
Overcurrent protection setting	5A	2A	1A	2A	4A

Table 9-503a Rated Outputs

Output	12V	15V	24V-F	24V	38VU
Connector	J1704-1	J1705-9	J1705-1	J1703-1 J1703-2 J1703-3 J1703-4	J1702-1
Power supply tolerance	±10%	±10%	±10%	±10%	±10%
Overcurrent protection setting	5A	1A	2A or more	5A	5A

Table 9-503b Rated Outputs

The ratings of the fuses on the DC fuse PCB and the AC fuse PCB are as shown in Table 9-504.

PCB	Signal	Rating
AC fuse PCB	FU101	250V, 2A
DC fuse PCB	FU901, FU903, FU904, FU906, FU934, FU937	60V, 3A
	FU924, FU933, FU939	60V, 4A
	FU905, FU921, FU923, FU931, FU932, FU936, FU938	60V, 5A
	FU935, FU940	60V, 7A
	FU922, FU925, FU941	125V, 5A

Table 9-504 Fuse Ratings

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C. Protection System

The fuse on the DC fuse PCB is designed to melt if an overcurrent occurs in any of the loads. Or, the overcurrent protection circuit on the DC power supply PCB will turn on to stop the output of the DC power supply.

If the overcurrent protection circuit 1 on the DC power supply PCB detects overcurrent, it will stop output 1 and output 2; output 1 is used to drive the logic system so that its suspension will help prevent malfunction of the copier. If the overcurrent protection circuit 2 detects overcurrent in the drive system, on the other hand, the copier will stop output 2 only.

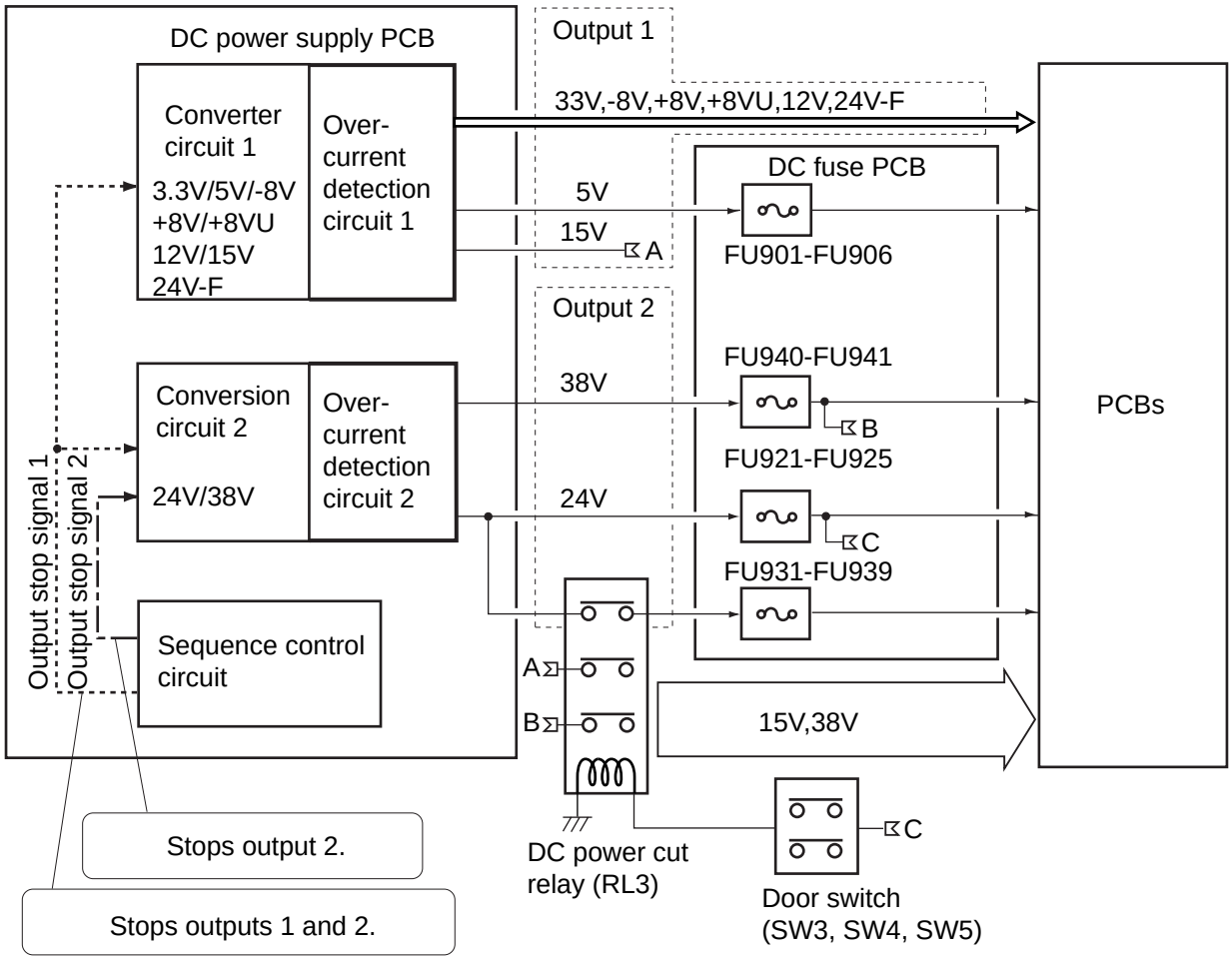

Figure 9-502 Block Diagram of the Protection System

Detection by	Copier operation	Resetting
Overcurrent protection circuit 1	Stops outputs 1 and 2 from the DC power supply PCB.	Turn off the power switch, and remove the cause; then, wait for about 3 min, and turn on the power switch.
Overcurrent protection circuit 2	Stops output 2 from the DC power supply PCB.	

Table 9-505 Protective Functions

D. Backup Battery

The copier's CPU PCB is equipped with two lithium batteries to back up various data in the event of power failure (or when the power plug is disconnected).

Battery (lithium)	BAT1 (3V,1000mAh)	BAT2 (3V,550mAh)
Uses (backup description)	Control value data for R-CON and PANEL-CON. Data of service mode (ADJUST) related to the reader unit: alarm, jam, error history data.	Control data for DC-CON. Data for service mode (ADJUST) related to the printer unit.
Life	5 yr (approx.; with the power plug disconnected).	
Replacement	On a battery basis (recharging not possible).	
After replacement	Enter the values recorded on the service label.	

Table 9-506 Functions of the Batteires

Caution:

For replacement, be sure to use the one indicated in the Parts Catalog. The use of a battery other than the one indicated can cause combustion or explosion.
If used wrongly, a lithium battery can cause combustion or chemical explosion. Do not re-charge, disassemble, or incinerate it.
Keep all lithium batteries out of reach of children. Be sure to dispose of any used batteries according to the appropriate instructions.

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VI. EDITOR

A. Outline

The copier's editor is of a type referred to as a static editor, consisting of a tablet which enables reading in horizontal (X) and vertical (Y) directions and a pen switch.

The editor controller PCB reads points pressed by the pen switch as defining a selected area.

The copier's tablet consists of electrode wires arranged at intervals of 6 mm, and the static bond occurring in response to contact between an electrode wire and the pen switch will be identified as a specific pen input point.

B. Operations

When the pen switch presses on the tablet, the CPU on the editor controller PCB applies pulses to each electrode wire through the tablet decoder in a specific direction in terms of 1, 2, ..., n-1, n, n+1.

The static bond occurring between the pulse and the pen switch allows the controller PCB to read the level (strong or weak) of the voltage through the pen switch. (Figure 9-601)

The voltage read in this way is converted into a digital signal by the A/D conversion circuit on the controller PCB, and is computed into an area (in mm) by the CPU; the result is then sent to the copier.

Reference:

The copier uses static bonding to detect a point of input, allowing the use of a thick original (4 mm or less). On the other hand, it does not allow the use of an object made of conducting material, pressure-sensitive paper, or carbon-backed paper.

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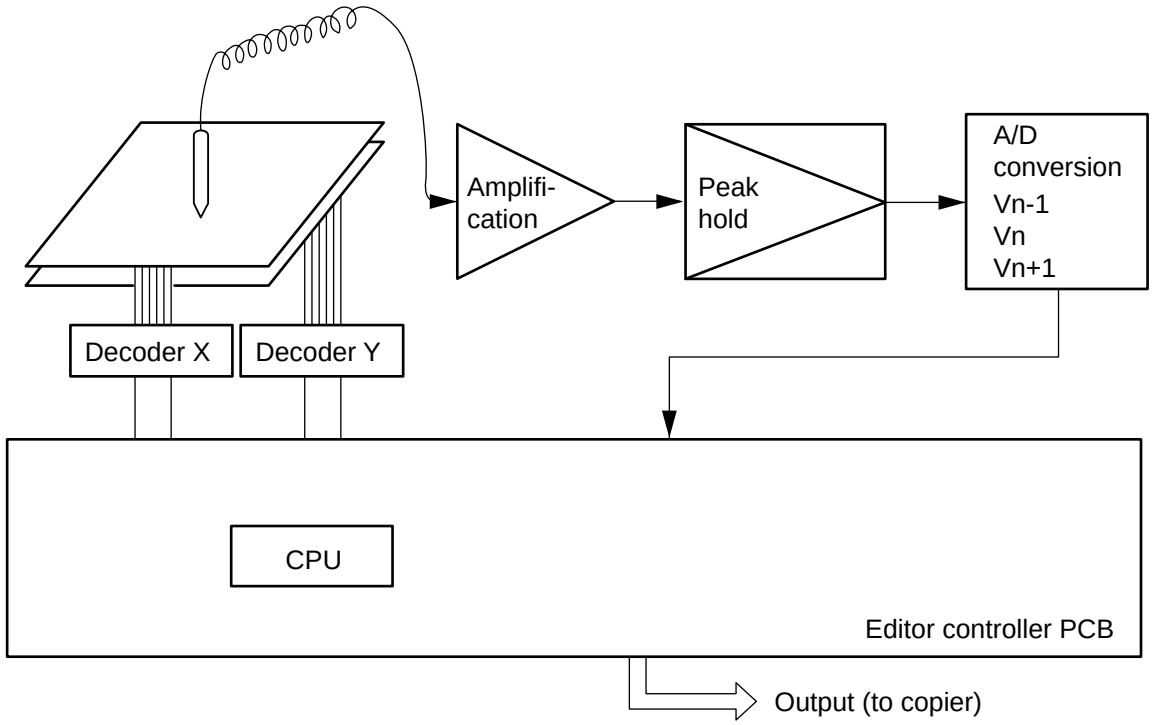

Figure 9-601

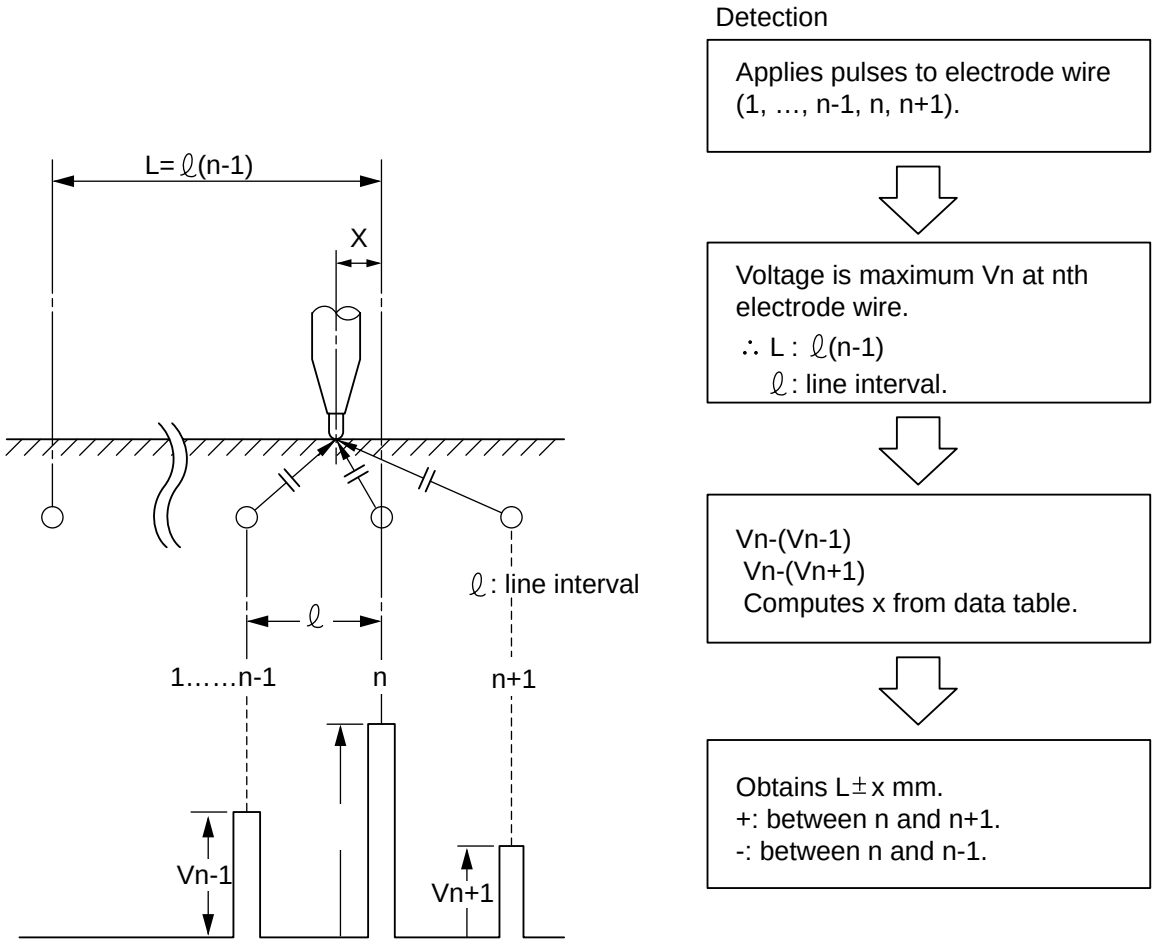

Figure 9-602

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C. Zero-Adjustment of Input Coordinates

If you have replaced the editor controller PCB or the tablet, be sure to set the DIP switch on the controller PCB according to the label attached to the cable of the tablet (Figure 9-603 and -604).

If a discrepancy still exists after setting the DIP switch, execute EDITOR>ADJUST>EDADJ-X,Y in service mode.

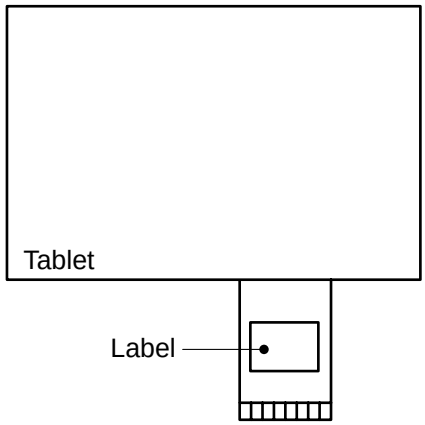

Figure 9-603

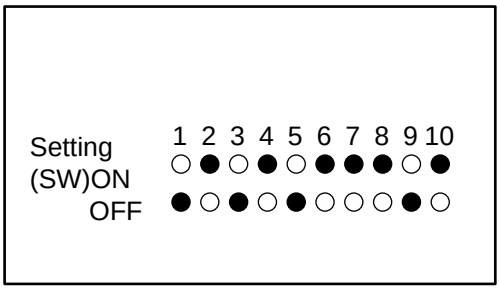

Figure 9-604

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VII. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (Do not insert a screwdriver or the like into the laser path.)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum. The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. Covers

1. External Covers

[1] Rear cover (5)
[2] Left upper cover (2)
[3] Left lower cover (4)
[4] Delivery upper cover (2)
[5] Right upper cover (2)
[6] Right rear cover 1 (1)
[7] Right rear cover 2 (2)
[8] Right middle cover (2)
[9] Multifeeder tray
[10] Rear upper cover (2)
[11] Upper cover (11)
[12] Right face cover (2)
[13] Right front cover (2)
[14] Right lower cover

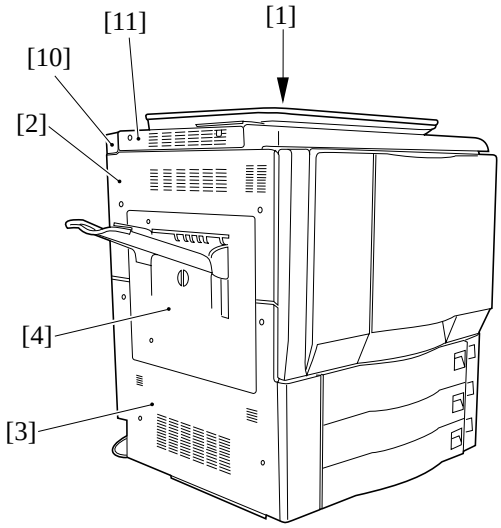

Figure 9-701

Reference:

The number in parentheses indicates the number of mounting screws used. Note that one of the screws used to mount the rear cover must be used together with a toothed washer.

Remove the covers as needed when cleaning, inspecting, or repairing the inside of the machine.

Those covers that may be detached by mere removal of screws are omitted from the discussions.

2. Right Upper Cover

A hook is provided at the top and the bottom. Be sure to engage the top hook on the upper cover before engaging the bottom hook with the right front and right rear covers.

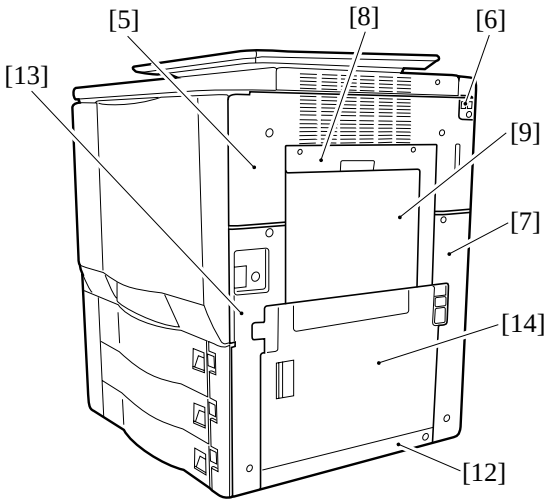

Figure 9-702

3. Left Inside Cover

1) Remove the four screws [1].
2) Slide out the transfer drum frame, and remove the left inside cover [2].

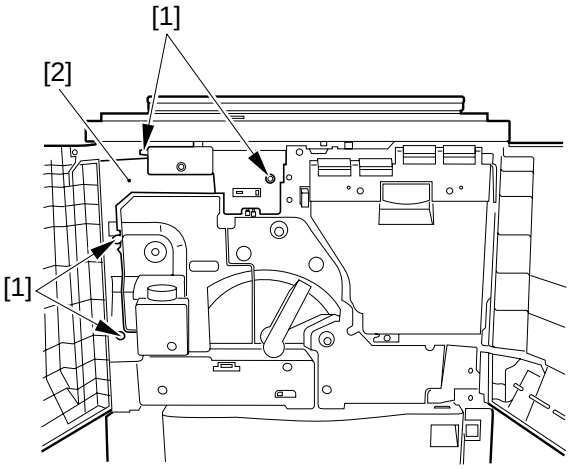

Figure 9-703

4. Transfer Drum Frame Cover

1) Remove the transfer drum knob [1].
2) Remove the two screws [2], and detach the transfer drum frame cover [3].

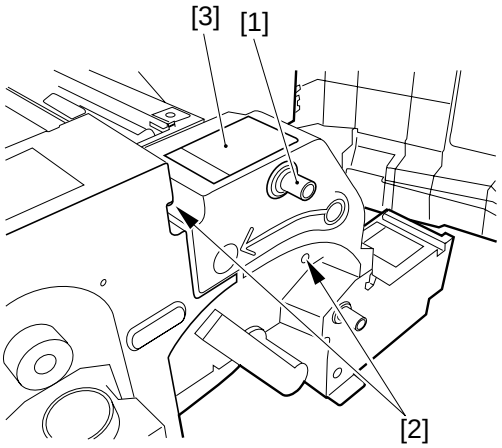

figure 9-704

5. Fixing Assembly Cover

1) Remove the screw, and detach the fixing knob [1].
2) Remove the two screws [2], and detach the fixing assembly cover [3].

Caution:

When mounting the fixing assembly cover, be sure that the hook at the bottom of the cover is securely fitted into the hole in the transfer drum frame.

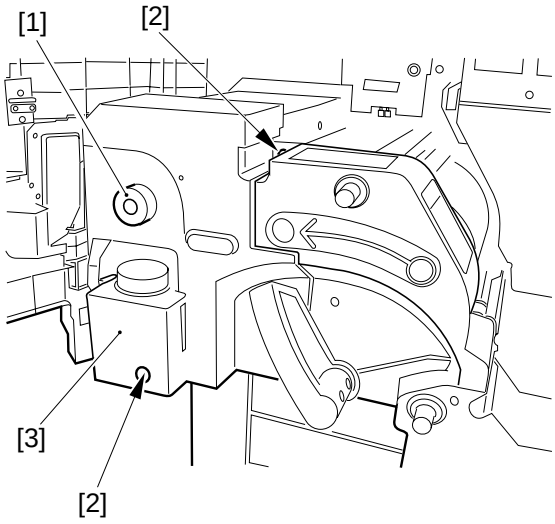

Figure 9-705

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6. Transfer Drum Frame Right Cover

1) Pull out the registration roller knob [1].
2) Remove the three screws [2], and remove the transfer drum frame right cover [3].

Caution:

When mounting the transfer drum frame right cover, be sure that the hook at the bottom of the cover is securely fitted in the hole in the transfer drum frame.

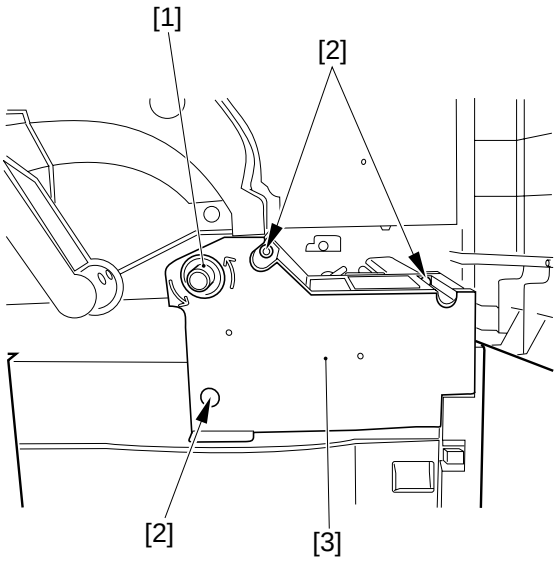

Figure 9-706

7. Removing the Copyboard Glass

1) Remove the two screws, and detach the copyboard glass retainer (right).
2) Lift the right end of the copyboard glass to detach.

Reference:

When removing the copyboard glass, do not remove any part except the copyboard glass retainer (right).
When mounting it, be sure to secure it in place by butting it against the left rear while taking care so it will not ride over the butting plate at the front and the rear.

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8. Removing the Upper Cover

1) Remove the rear upper cover.
2) Remove the control panel.
3) Remove the three face plates [1] of the screw holes for the projector with a flat-blade screwdriver.
4) Remove the copyboard glass [2].

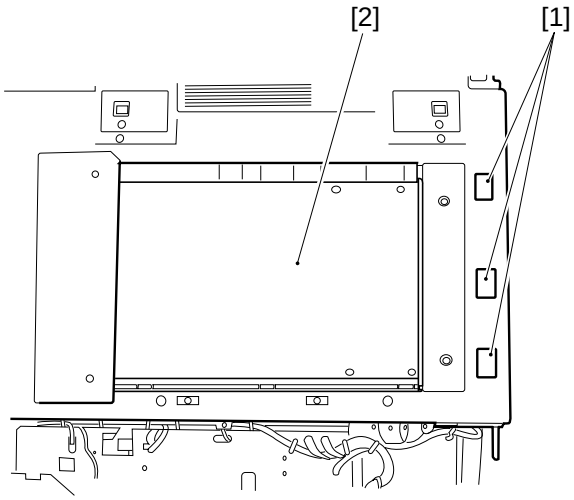

Figure 9-707

5) Remove the two screws [3], and detach the vertical size plate [4].

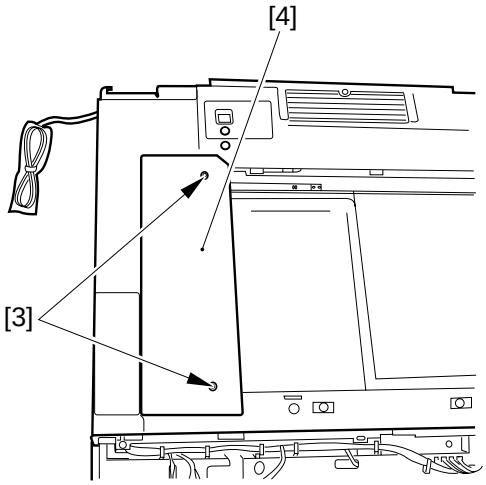

Figure 9-708

6) Remove the two flat-head screws [5].
7) Remove the nine screws [6], and detach the upper cover [7].

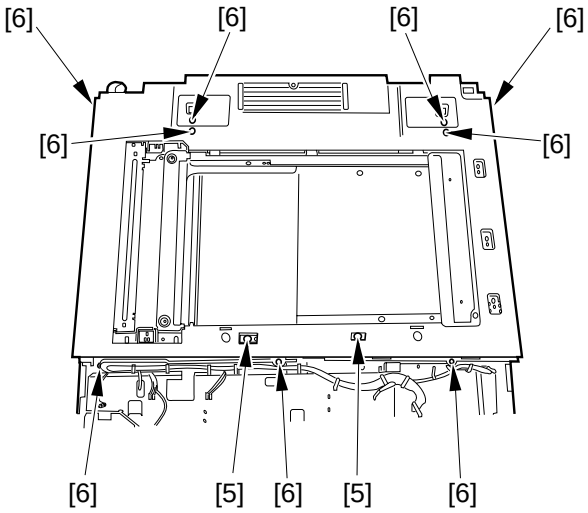

Figure 7-709

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B. Control Panel

1. Removing the Control Panel

1) Remove the four screws [1].
2) Disconnect the two connectors, and detach the control panel [2].

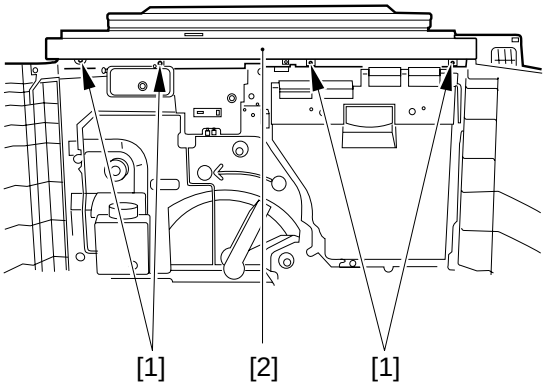

Figure 9-710

2. Removing the Control Panel PCB

1) Turn over the control panel.
2) Disconnect the five connectors [1] of the control panel PCB.
3) Remove the five screws (M3x8) [2] and the screw (M3x4) [3]; then, detach the control panel PCB.

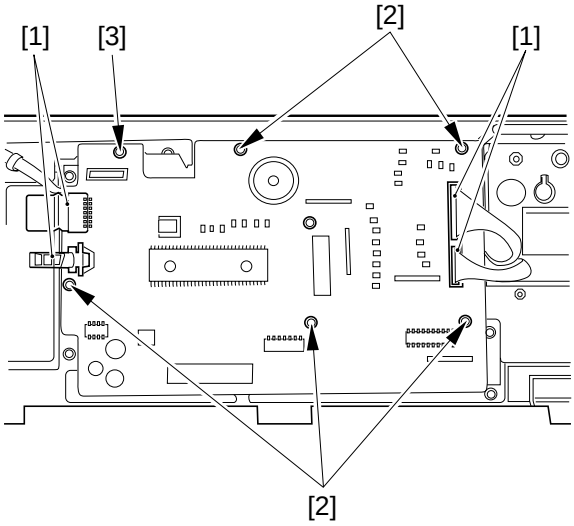

Figure 9-711

3. Removing the LCD PCB

1) Remove the control panel PCB.
2) Remove the seven black screws [1] and the grounding screw [2]; then, detach the control panel fixing plate.

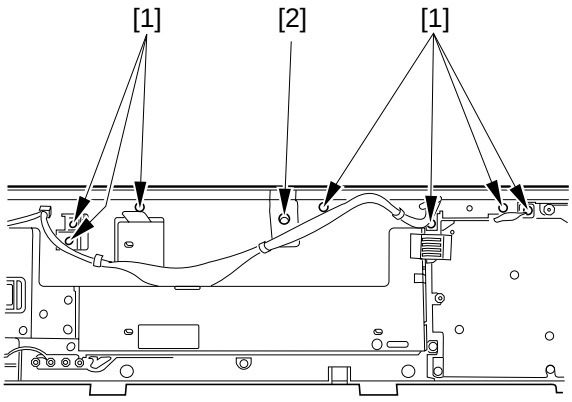

Figure 9-712

3) Disconnect the connector [3], and remove the four screws [4]; then, detach the LCD PCB.

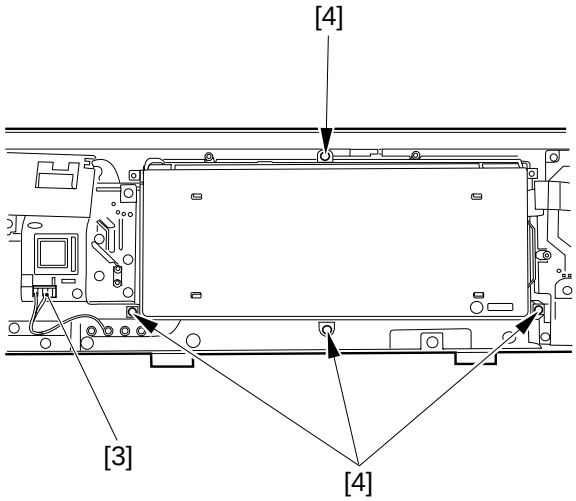

Figure 9-713

4. Removing the Numeric Keypad PCB

1) Remove the control panel PCB.
2) Remove the control panel fixing plate.
3) Remove the 13 screws [1], and remove the pilot lamp assembly [2].
4) Remove the numeric keypad PCB [3].

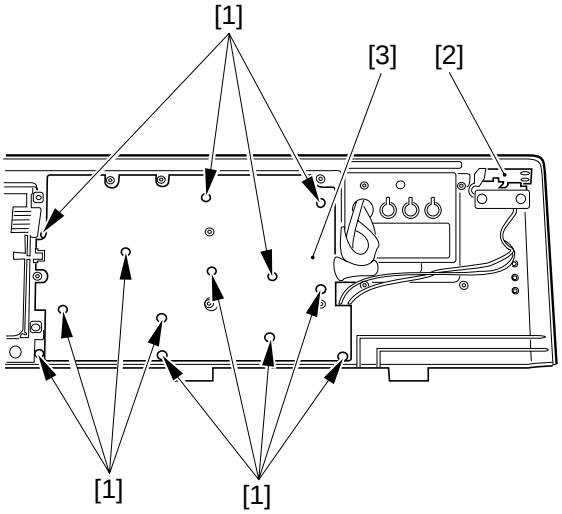

Figure 9-714

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C. Editor

1. Removing the Editor Controller PCB

1) Remove the six face plates [1] used for screws.

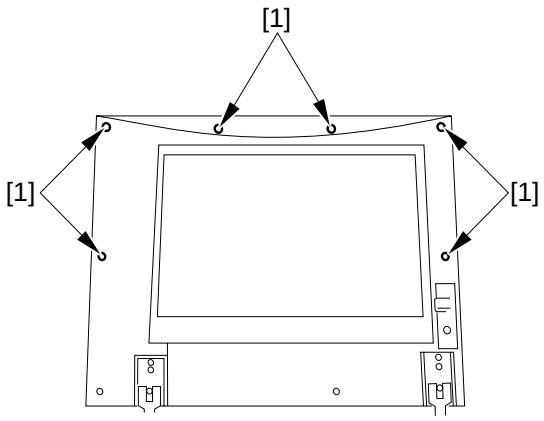

Figure 9-715

2) Remove the two screws (M8x6), six screws (M8x10), and six screws (M8x23), a total of 14 screws; then, detach the copyboard cover.
3) Remove the two screws [2], and detach the controller PCB cover [3].

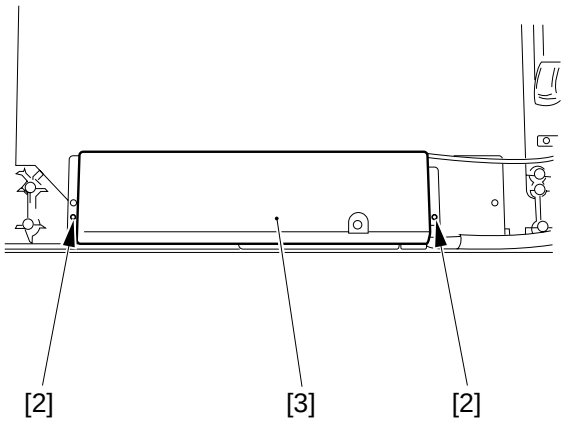

Figure 9-716

4) Disconnect the two connectors [4], and remove the 4 screws [5] and the flat cable [6]; then, detach the editor controller PCB[7].

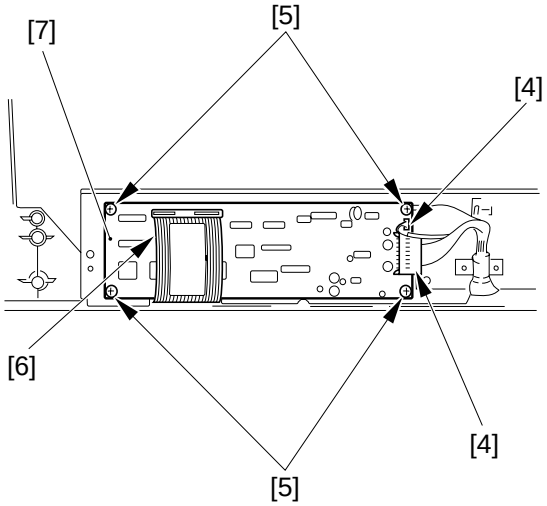

Figure 9-717

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Caution:
When mounting the editor control PCB, be sure to match the ON/OFF notations of the switches [1] and [2] on the PCB by referring to the switch settings indicated on the flat cable.

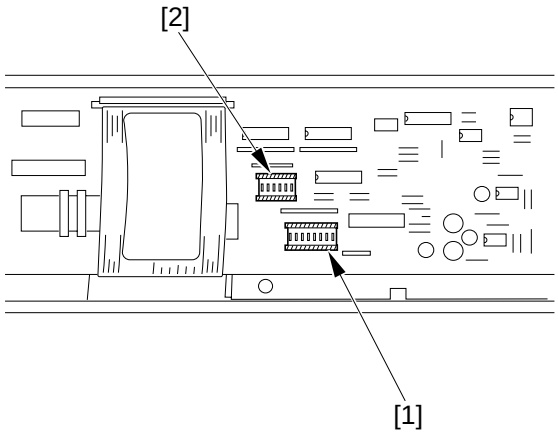

Figure 9-718

2. Removing the Editor Mirror

1) Remove the six face plates for screws.
2) Remove the two screws (M8x8), six screws (M8x10), and six screws (M8x28), a total of 14 screws; then, detach the copyboard cover.
3) Remove the two screws, and detach the controller PCB cover.
4) Remove the flat cable [1], and five screws [2]; then, remove the controller PCB support plate [3].
5) Remove the mirror plate [4].

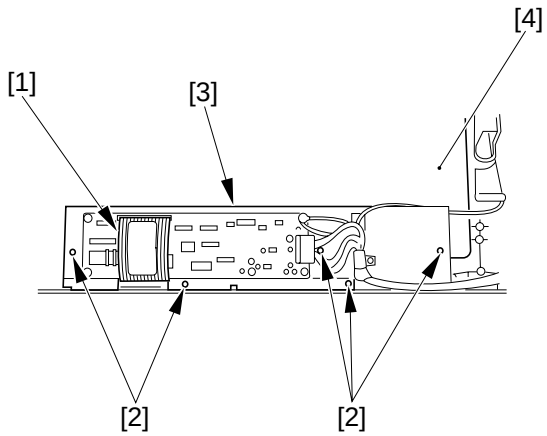

Figure 9-719

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D. Flywheel

1. Removing the Flywheel

Caution:
The copier's flywheel weighs a total of 13 kg, consisting of a 8-kg flywheel and a 5-kg flywheel. Take full care not to drop it, and be sure to hold it on its right and left as shown when handling it.

1) Remove the rear cover.
2) Turn the flywheel counterclockwise so that it is as shown in the figure.

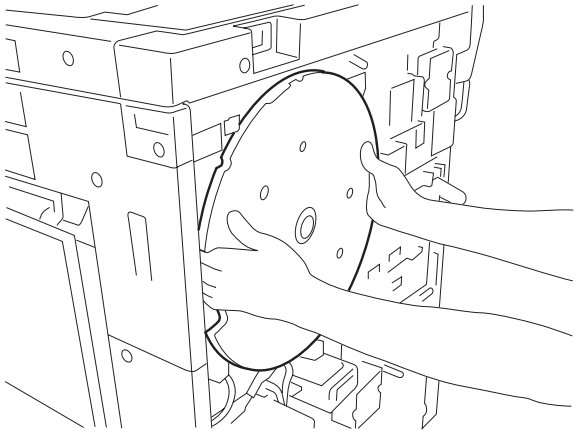

Figure 9-720

Caution:
Do NOT turn the flywheel clockwise. Otherwise, it will damage the cleaning blade, causing cleaning faults.

3) Remove the two screws [1], and detach the flywheel 1 [2].
4) Remove the two screws [3], and detach the flywheel 2 [4].

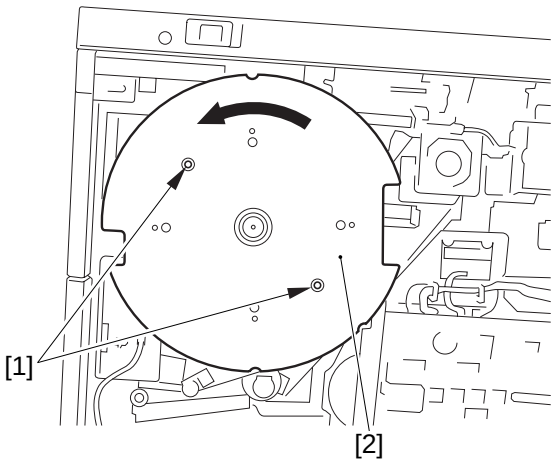

Figure 9-721

2. Points to Note When Handling the Flywheel

The flywheel 1/2 has its face and its back. Be sure to mount it so that the weight caution label is in view (toward the rear cover).

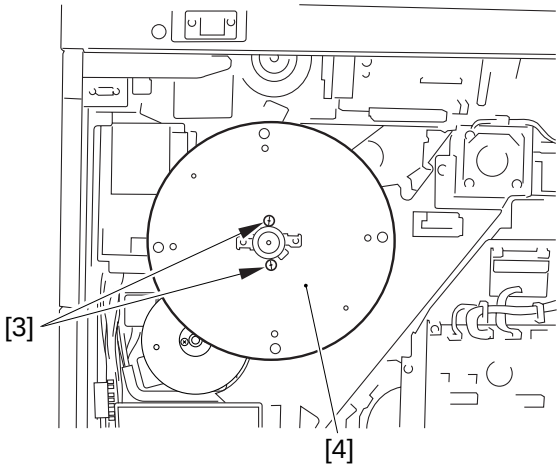

figure 9-722

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E. Fans

1. Outline

The copier is equipped with 14 fan motors to circulate air inside it, thereby preventing overheating.

FM1 Original exposure system cooling fan 1
FM2 Exhaust fan
FM3 Primary charging assembly fan
FM4 Laser scanner motor cooling fan
FM5 Ozone suction fan
FM6 Toner suction fan
FM7 IP cooling fan
FM8 Electric unit cooling fan
FM9 Power supply cooling fan
FM9 Power supply cooling fan 1
FM11 Delivery cooling fan
FM13 Power supply cooling fan 2
FM14 Original exposure system cooling fan 2
FM15 Original exposure system cooling fan 3
FM16 Back suction fan
FM17 Power supply cord mount fan
[1] Air filter
[2] Toner filter
[3] Ozone filter

No description is given for how to remove the fans.

Caution:
Each fan causes a current of air in a specific direction, requiring care when mounting it for correct orientation.

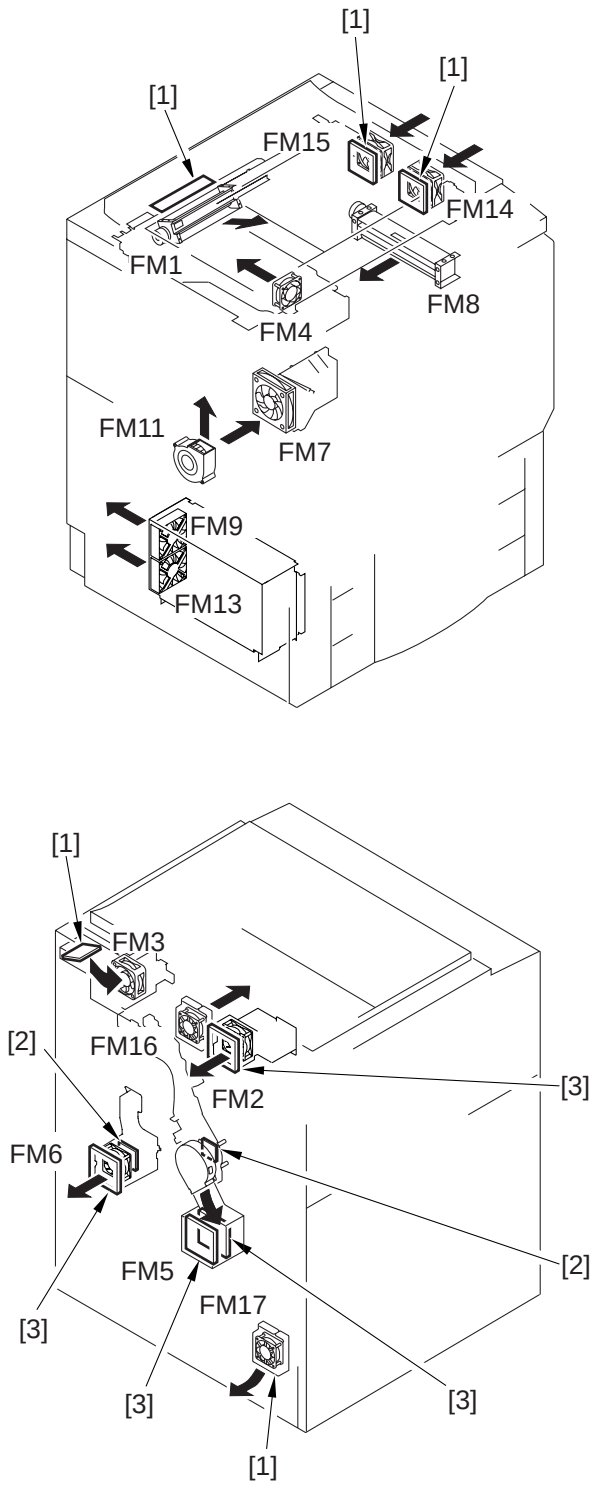

Figure 9-723

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F. Drive System Belt Layout

The copier's drive belts include the following:

[1] belt for the developing assembly, registration roller, attraction roller, and photosensitive drum cleaner
[2] belt for the multifeeder pickup assembly

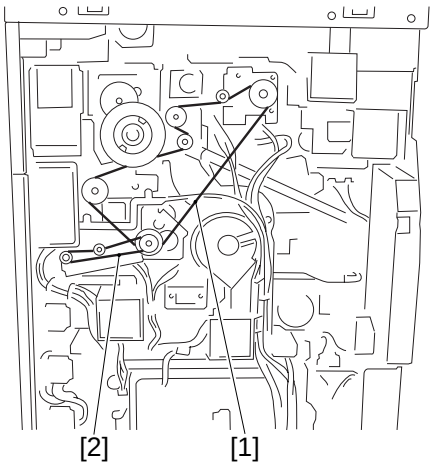

Figure 9-724

G. Drum Motor Assembly

1. Removing the Drum Motor (M2)

1) Remove the photosensitive drum unit.
2) Remove the rear cover.
3) Remove the flywheel.
4) Remove the potential control PCB.
5) Remove the two screws [1], and detach the drum motor flywheel [2].

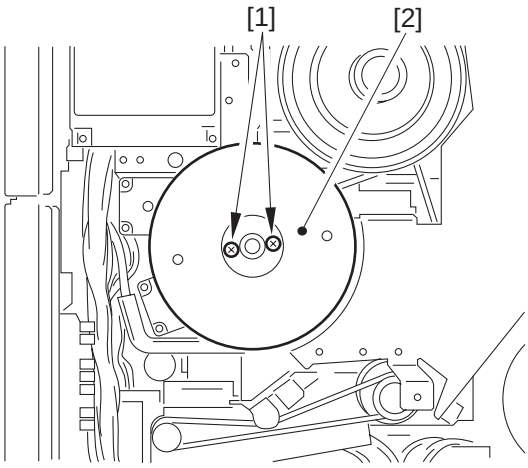

Figure 9-725

6) Remove the two screws [3].

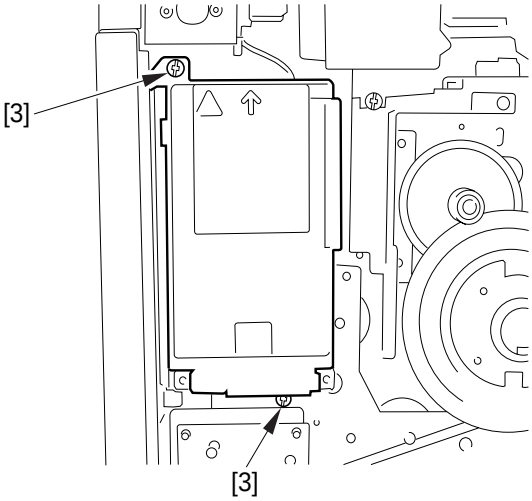

Figure 9-726

7) Disconnect the connector A [4], and shift the lamp regulator unit slightly to the front, and disconnect the connector B [5] and connector C [6]; then, detach the lamp regulator PCB.

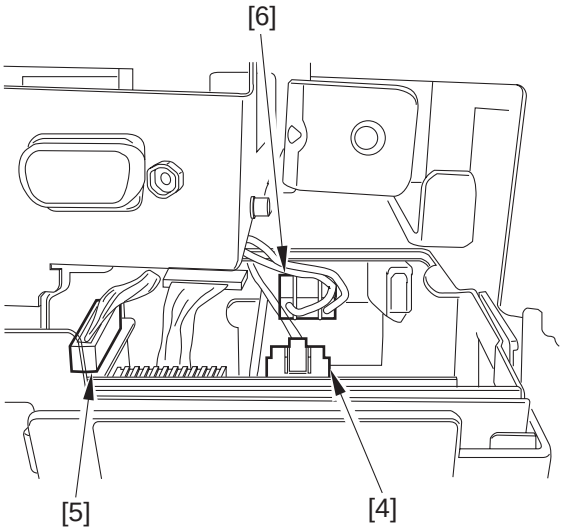

Figure 9-727

8) Remove the three screws [7], and detach the duct [8] of the primary charging assembly fan.
9) Remove the three screws, and disconnect the connector; then, detach the primary charging assembly fan.

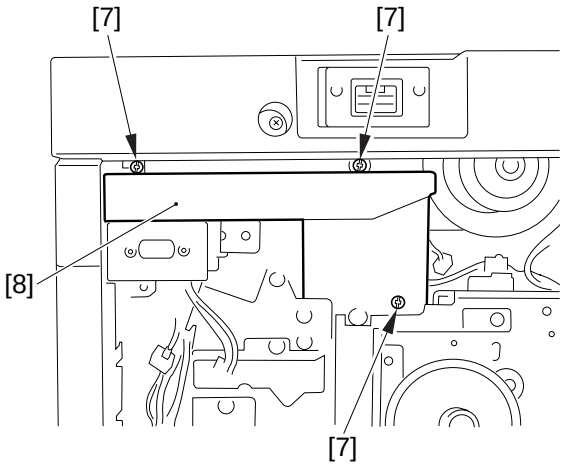

Figure 9-728

10) Remove the screw [9] and the two hex-hole stop screws [10]; then, detach the gear [11] from the drum shaft.

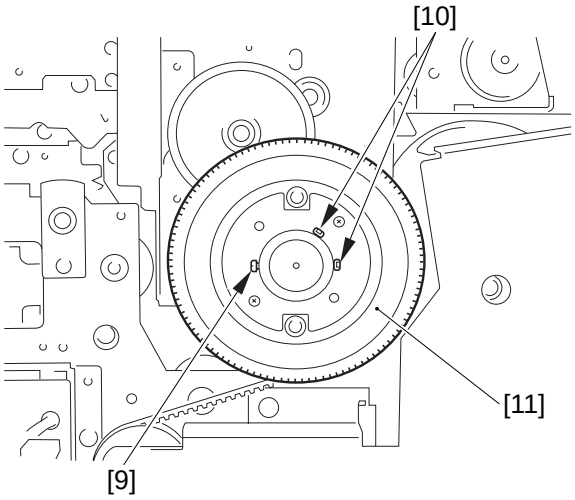

Figure 9-729

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11) Remove the static eliminator brush.
12) Disconnect the two connectors [12], and remove the seven screws [13]; then, detach the drum motor assembly [14] together with the fixing plate.
13) Remove the four screws, and detach the drum motor from the mounting plate.

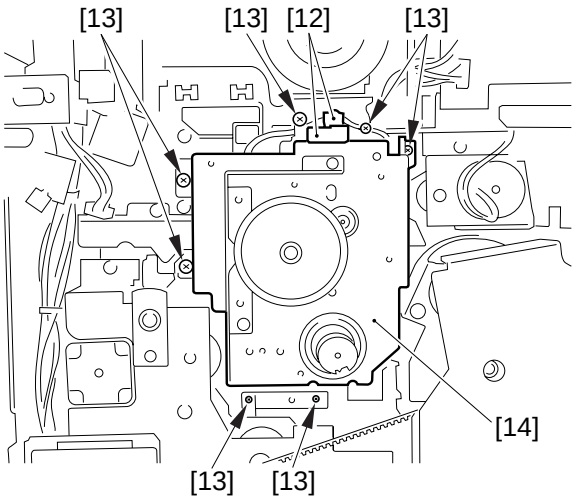

Figure 9-730

2. Mounting the Drum Motor Assembly

When the drum motor assembly is removed from the copier, be sure to adjust its position using the drum shaft position tool (FY9-3045-000) when mounting it back to eliminate any discrepancy.

1) Slide out the photosensitive drum unit from the copier.
2) Remove the six screws [1], and detach the photosensitive drum butting block [2] (front, rear); then, detach the photosensitive drum [3] from the photosensitive drum frame unit [4].

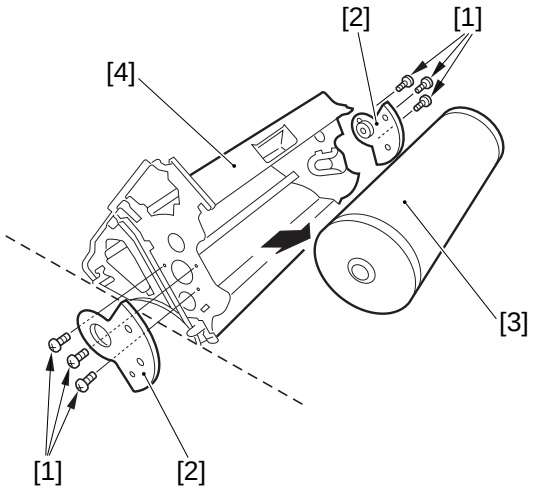

Figure 9-731

3) Insert the photosensitive drum frame unit [5] in the copier, and mount it with three screws [6].

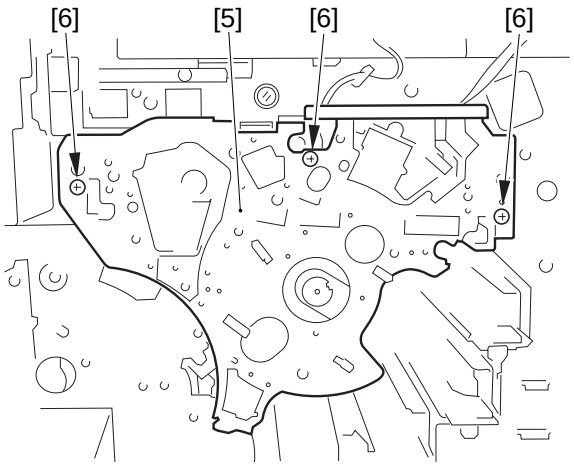

Figure 9-732

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4) Temporarily secure the drum motor assembly [7] to the copier with seven screws [8].

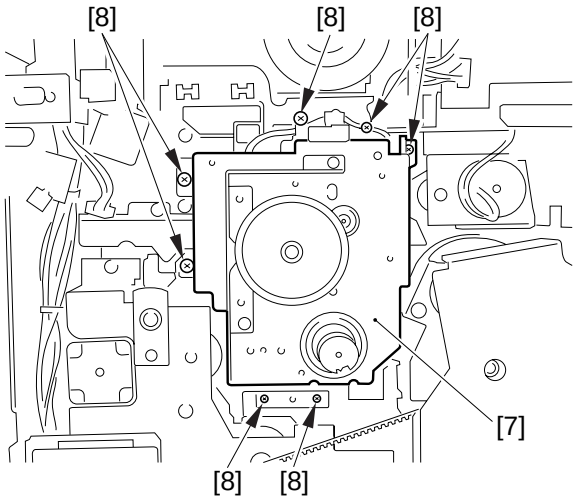

Figure 9-733

5) Mount the drum shaft positioning tool [9] to the photosensitive drum frame unit with the two screws [10] removed in step 2).
6) Secure the drum motor assembly in place with seven screws.
7) Remove the drum shaft positioning tool, slide out the photosensitive frame unit from the copier; then, mount the unit and parts removed in steps 1) and 2).

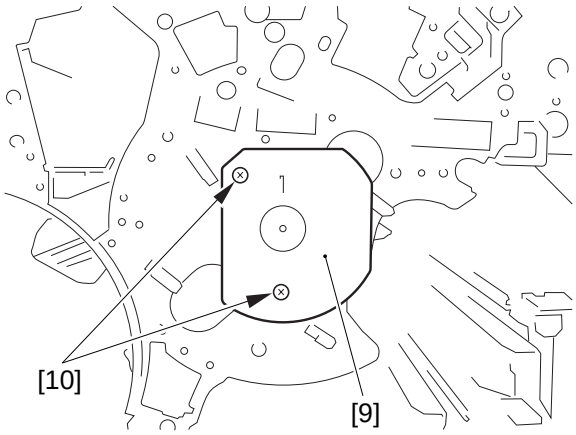

Figure 9-734

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H. Main Motor (M4) Drive Assembly

1. Removing the Main Motor (M4)

1) Remove the rear over.
2) Remove the flywheel.
3) Open the CPU PCB.
4) Remove the back suction fan [1].
5) Remove the six screws [2], and detach the drive assembly reinforcing plate [3].

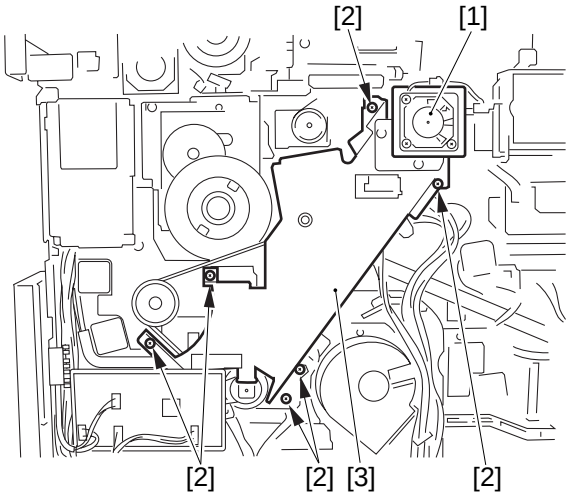

Figure 9-735

6) While lifting the tension plate [4] by hand, detach the drive belt 1 [5].
7) Disconnect the two connectors [6], and remove the five screws [7]; then, detach the main motor assembly [8] together with the mounting plate.

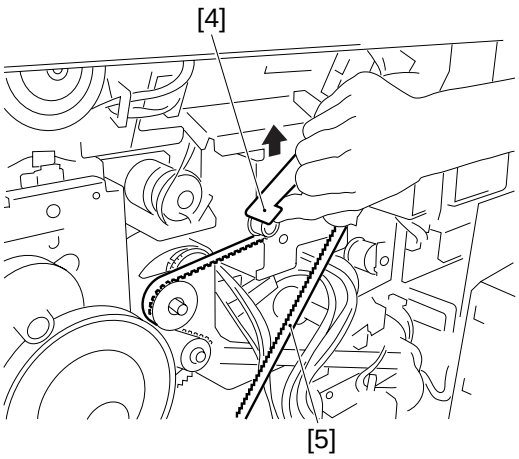

Figure 9-736

8) Remove the clamp of the motor output shaft, and remove the four screws; then, detach the main motor from the mounting plate.

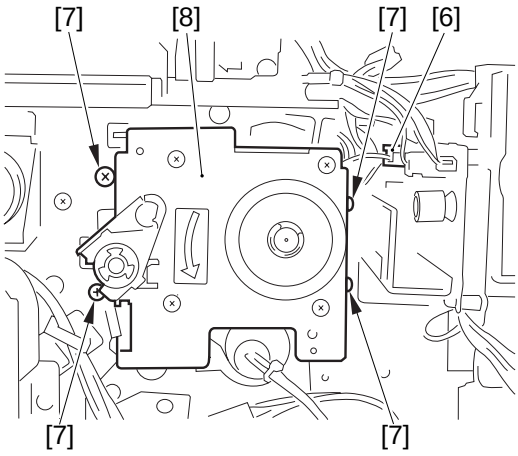

Figure 9-737

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I. CPU PCB

1. Removing the CPU PCB

Check and record the data values of ADJUST and OPTION in service mode before starting replacement work.

1) Remove the rear cover.
2) Disconnect all connectors.
3) Remove the eight screws [1], and detach the CPU PCB [2].

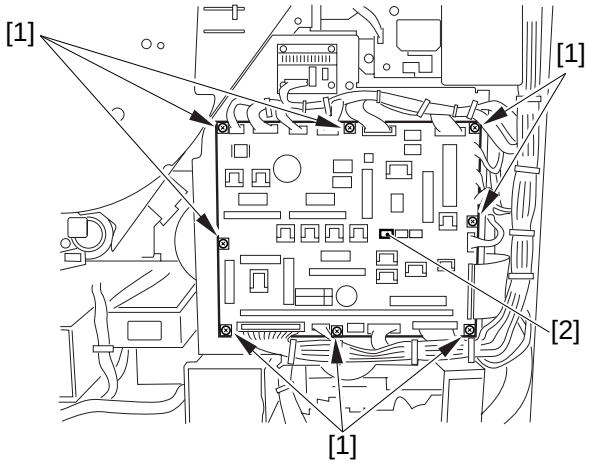

Figure 9-738

2. Replacing the CPU PCB

1) Check and record the data values of ADJUST and OPTION in service mode. Or, back up the data using the downloading tool.
2) Remove the CPU PCB.
3) Mount the new PCB.
4) Detach the three flash memory PCBs and memory PCB from the old CPU PCB, and mount them on the new CPU PCB.
5) Turn on the power switch.
6) Select FUNCTION>CLEAR-DC-CON and R-CON in service mode, and set them to '1'.
7) Enter the data values recorded in step 1).
8) Execute FUNCTION>CCD>CCD-ADJ in service mode.

3. Replacing the Flash Memory on the CPU PCB

1) Check and record the data values of ADJUST and OPTION in service mode. Or, back up the data using the downloading tool.

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2) Remove the old flash memory PCB from the CPU PCB.
3) Mount the new flash memory to the CPU PCB.
4) Turn on the power switch.
5) Select FUNCTION>CLEAR>DC-CON and R-CON in service mode, and set them to '1'.
6) Enter the data values recorded in step 1).
7) Execute FUNCTION>CCD>CCD-ADJ in service mode.

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J. HVT PCB

1. Removing the HVT PCB

1) Remove the rear cover.
2) Disconnect all eight connectors.
3) Remove the four screws [1], and detach the HVT-DC PCB [2].

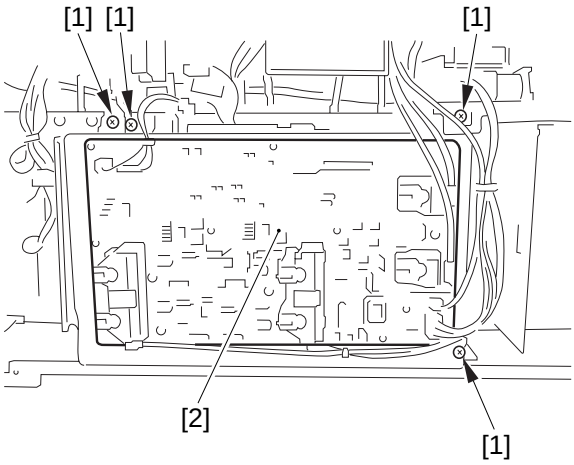

Figure 9-739

4) Disconnect all connectors.
5) Remove the three connectors [3], and detach the HVT-AC PCB [4].

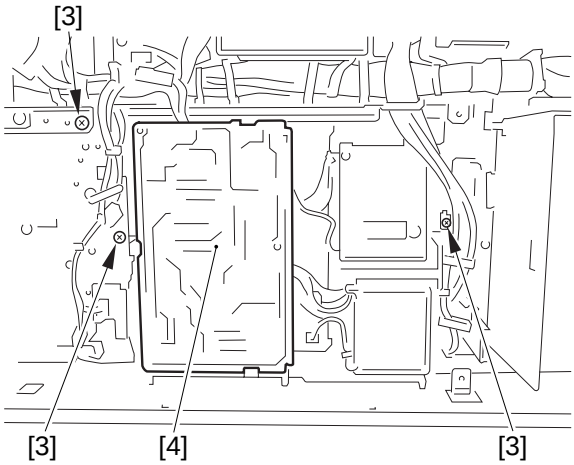

Figure 9-740

K. Developing Bias PCB

1. Removing the Developing Bias PCB

1) Remove the delivery assembly.
2) Disconnect the four connectors [1], and remove the two screws [2]; then, detach the developing bias PCB [3] together with the PCB case.

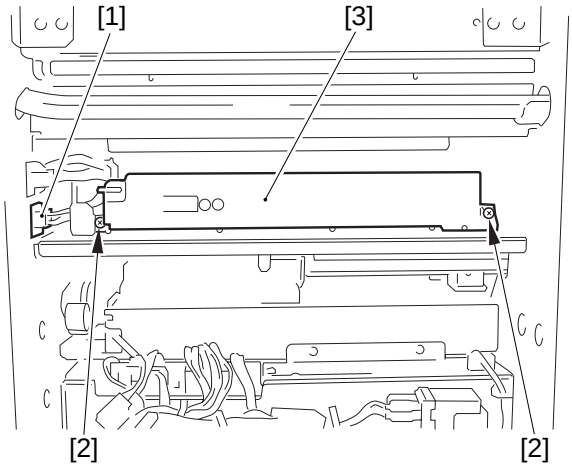

Figure 9-741

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CHAPTER 10

PAPER DECK

This chapter explains the operations and functions of the mechanisms used to pick up paper from the paper deck and the relationship between electrical and mechanical systems, and provides an outline of timing at which various associated parts are driven.

I. PAPER DECK 10-1
- A. Inputs to and Outputs from the Deck Driver 10-1
- B. Pickup 10-4
- C. Detecting Paper in the Deck 10-7
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- D. Feeding System 10-34
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I. PAPER DECK

A. Inputs to and Outputs from the Deck Driver

Inputs to the Deck Driver (1/2)

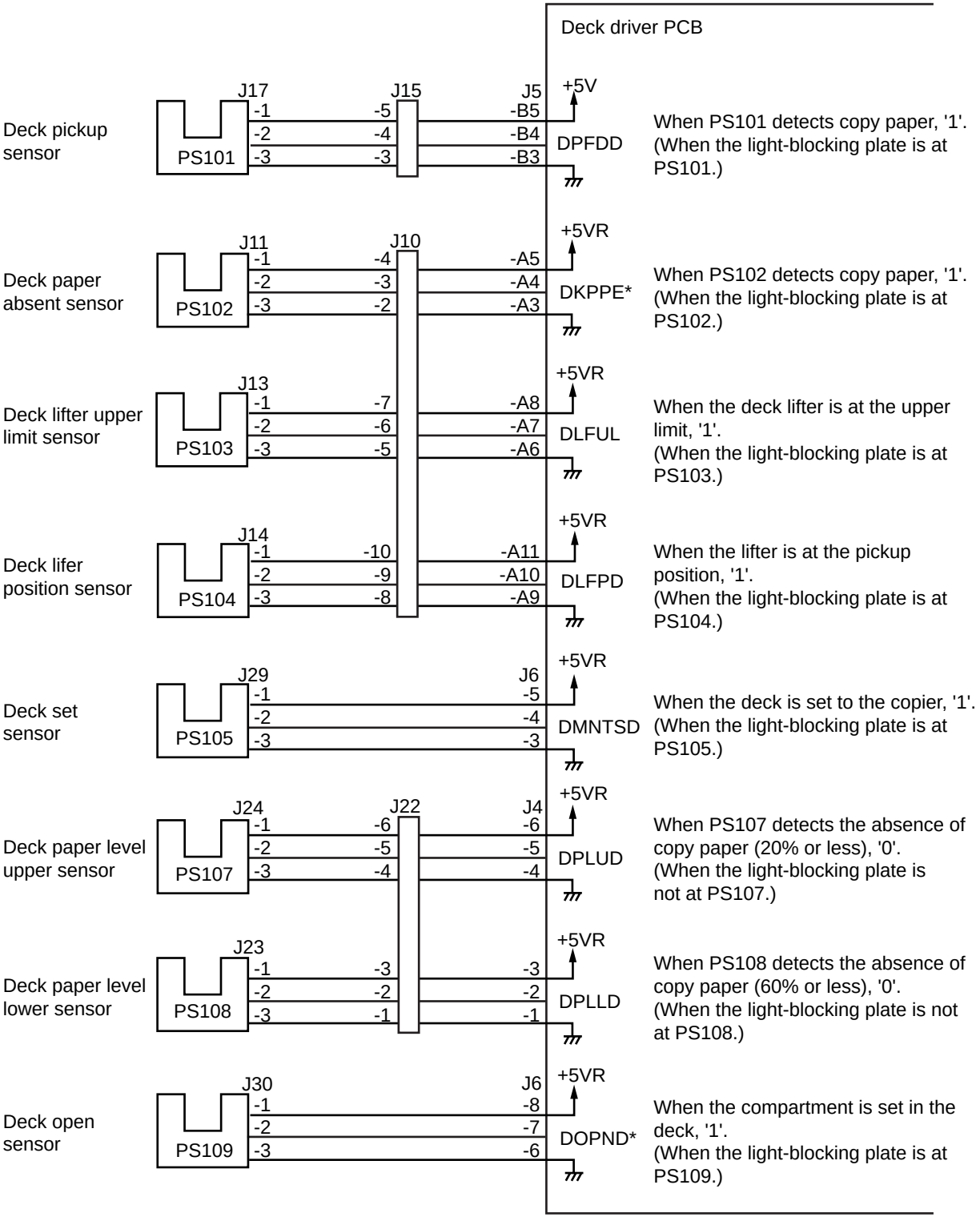
Deck driver PCB
Deck pickup sensor
PS101
J17
J15
J5
+5V
DPFDD
When PS101 detects copy paper, '1'. (When the light-blocking plate is at PS101.)
Deck paper absent sensor
PS102
J11
J10
+5VR
DKPPE*
When PS102 detects copy paper, '1'. (When the light-blocking plate is at PS102.)
Deck lifter upper limit sensor
PS103
J13
DLFUL
When the deck lifter is at the upper limit, '1'. (When the light-blocking plate is at PS103.)
Deck lifer position sensor
PS104
J14
DLFPD
When the lifter is at the pickup position, '1'. (When the light-blocking plate is at PS104.)
Deck set sensor
PS105
J29
J6
DMNTSD
When the deck is set to the copier, '1'. (When the light-blocking plate is at PS105.)
Deck paper level upper sensor
PS107
J24
J22
J4
DPLUD
When PS107 detects the absence of copy paper (20% or less), '0'. (When the light-blocking plate is not at PS107.)
Deck paper level lower sensor
PS108
J23
DPLLD
When PS108 detects the absence of copy paper (60% or less), '0'. (When the light-blocking plate is not at PS108.)
Deck open sensor
PS109
J30
J6
DOPND*
When the compartment is set in the deck, '1'. (When the light-blocking plate is at PS109.)

Figure 10-101

Inputs to the Deck Driver (2/2)

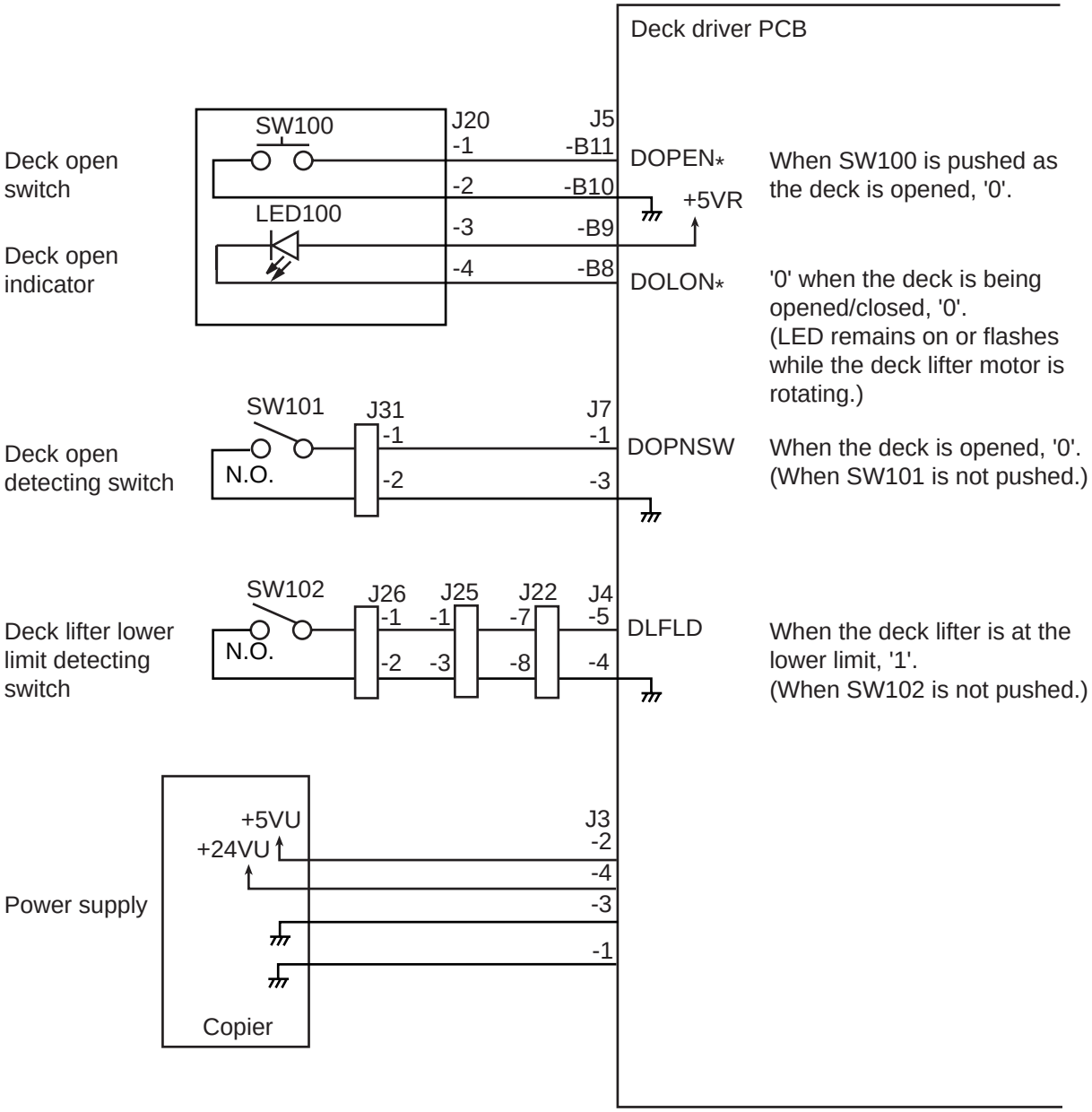

Figure 10-102

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Inputs to the Deck Driver (1/1)

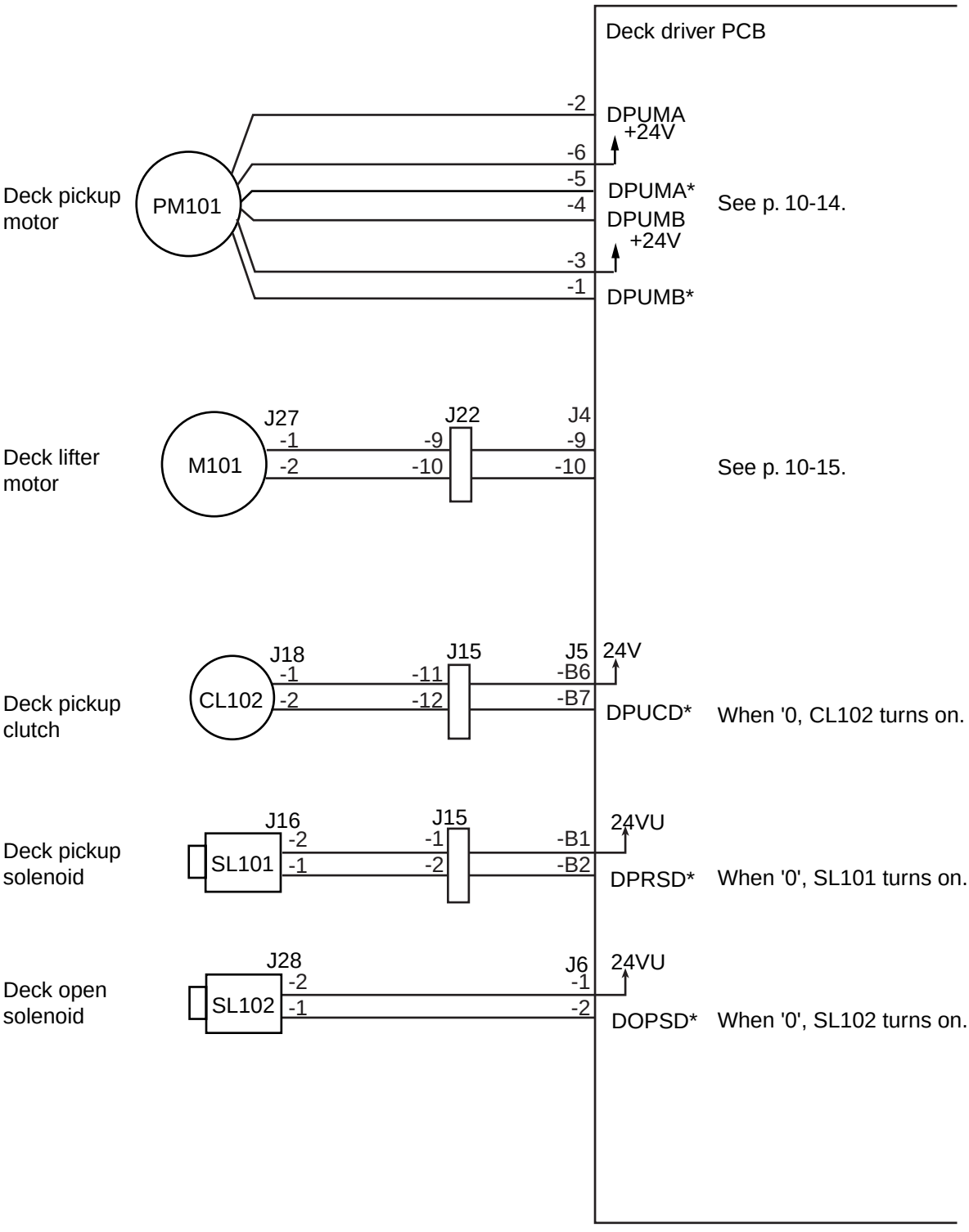

Figure 10-103

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B. Pickup

1. Outline

The paper deck (hereafter, “deck”) is capable of accommodating as many as 2500 sheets of copy paper (A4, LTR, B5; 105 g/m2) at one time, and is designed to feed copy paper in response to control signals from its host copier’s DC-CPU.

The lifter of the deck is driven by the deck lifter motor (M101), and the deck picks up and feeds copy paper using the drive from the deck pickup motor (PM101).

2. Pickup Operations

The copy paper set in the deck is lifted by the lifter, and held to a specific pickup position by the lifter.

When the Copy Start key is pressed and, as a result, the deck pickup clutch (CL102) turns on, the drive of the deck pickup motor (PM101) rotates the pickup roller to pick up cop paper. At this time, the pickup/feed roller and the separation roller make sure that only one sheet of copy paper is picked up; then, when the deck pickup sensor (PS101) detects the copy paper, the deck pickup solenoid (SL101) turns on to move the pickup roller away from the surface of the copy paper.

The copy paper is then moved to the copier’s registration roller and made to arch for removal of any skew. The registration roller controls the copy paper so that its leading edge will match the image on the photosensitive drum.

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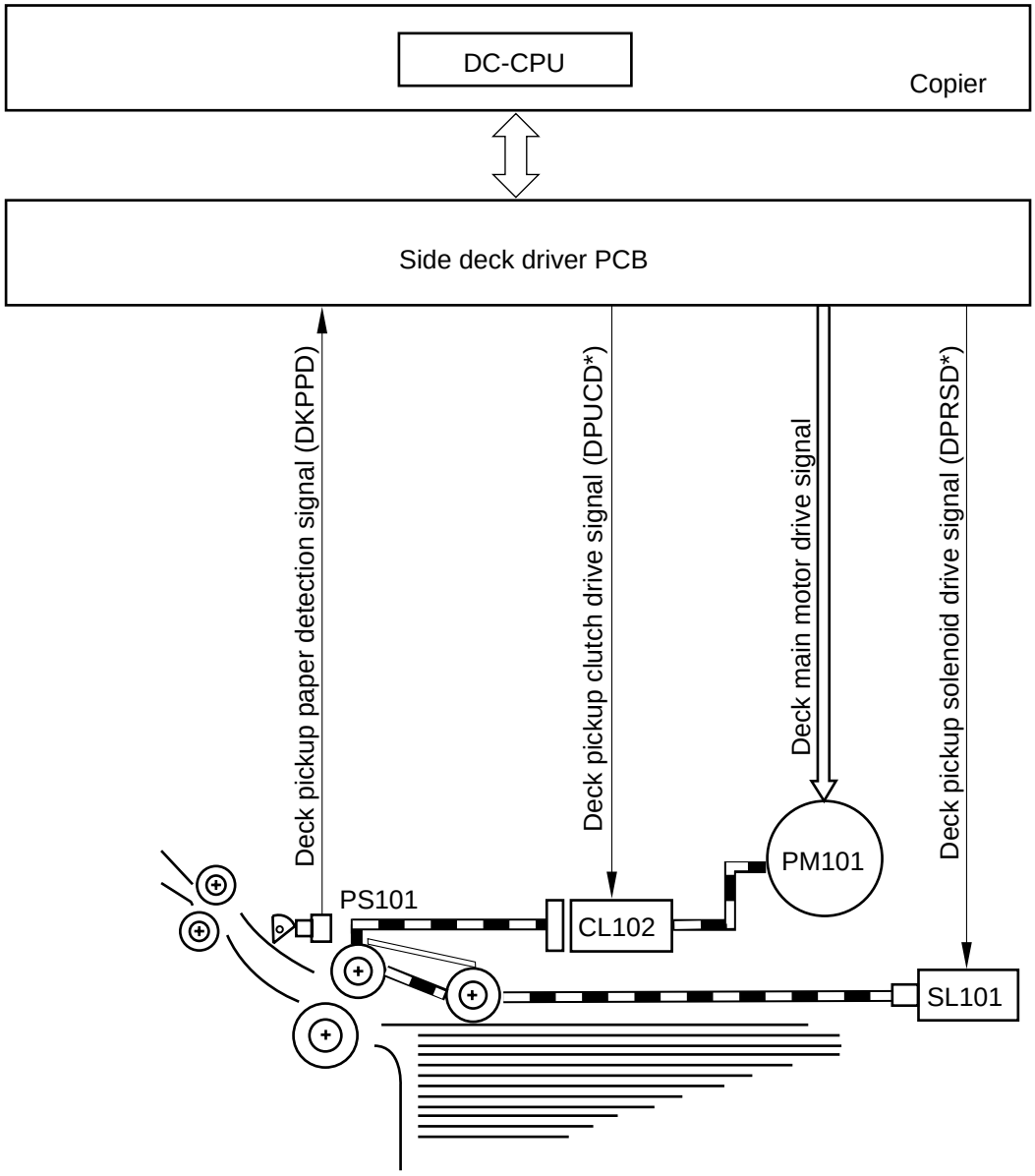

Figure 10-104

3. Sequence of Operations (pickup)

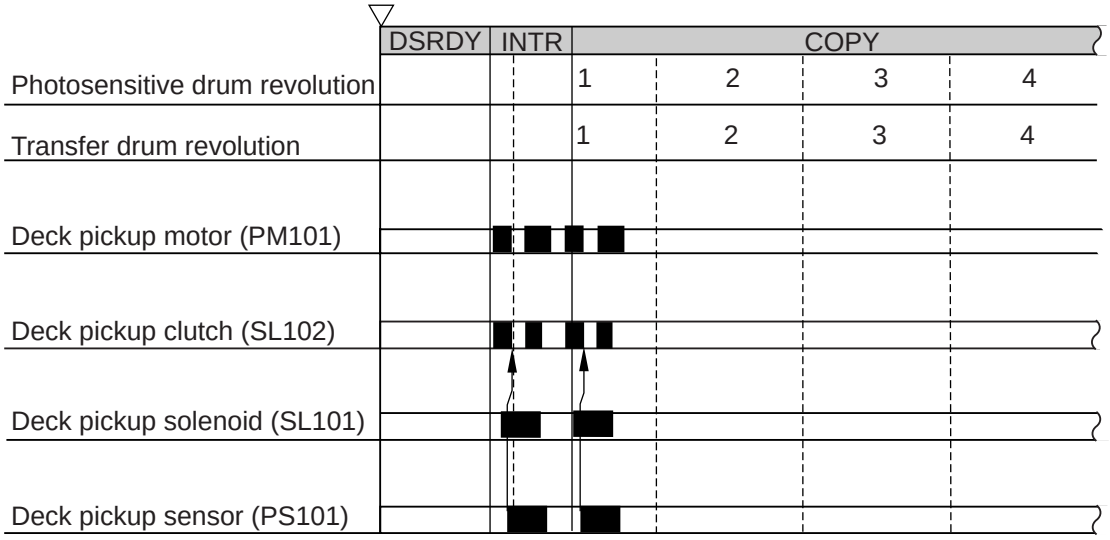

Figure 10-105

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C. Detecting Paper in the Deck

1. Detecting the Presence/Absence of Paper

The presence/absence of copy paper inside the deck is detected by the deck paper absent sensor (PS102). When copy paper runs out and, as a result, the paper detecting lever of the pickup roller assembly leaves the deck paper absent sensor, the copier will indicate the Add Paper message on the control panel.

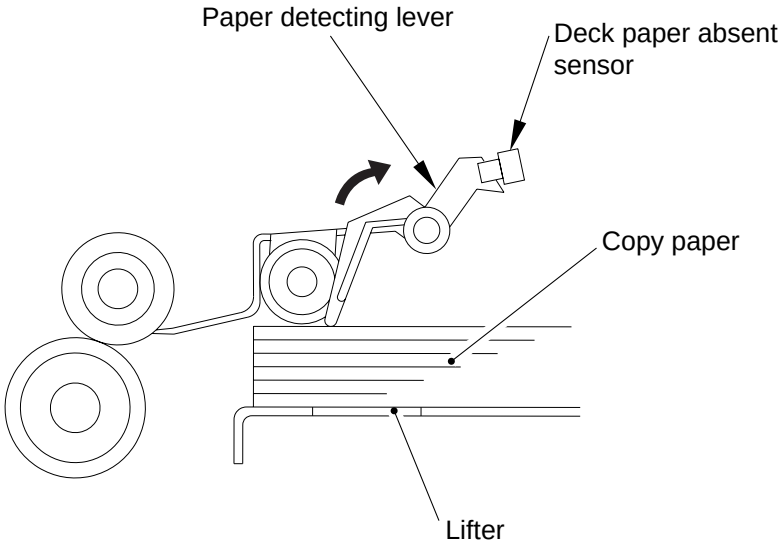

Figure 10-106a Paper Present

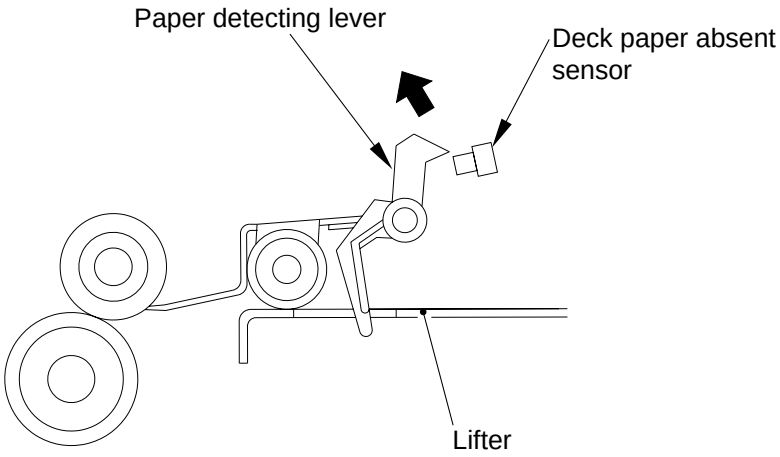

Figure 10-106b Paper Absent

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2. Switching the Deck Paper Size

The deck copy paper size may be changed by moving the guide plate inside the deck and then entering the new paper size in service mode (OPTION>ACC>DK-P) at time of installation or at the request of the user.

3. Detecting the Level of Paper in the Deck

The deck is capable of finding out an approximate volume of copy paper inside its compartment using the deck paper level upper sensor (PS107), deck paper level lower sensor (PS108), and deck paper absent sensor (PS102). It sends the result of its finding to the copier, which in turn will indicate the level on its control panel.

Table 10-101 shows the relationship between the level of copy paper and the states of sensors and the indications on the control panel.

Paper level	PS102	PS107	PS108	Indication on control level
100% to about 60%	1	1	1	
About 60% to about 20%	1	1	0	
About 20% or less	1	0	0	
No paper	0	0	0	

1: The light-blocking plate is over the sensor.
0: The light-blocking plate is not over the sensor.

Table 10-101

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D. Deck Lifter

1. Lifter Movement

The lifter of the deck is connected to a reel by means of a cable, and is driven by the deck lifter motor (M101). The lifter is moved up or down by changing the direction of motor rotation.

When the deck (compartment) is slid into the copier, the deck open detecting switch (SW101) is pushed; thereafter, the lifter starts to move up when the deck open sensor (PS109) detects the light-blocking plate. It will stop moving up when the deck lifter position sensor (PS104) detects the top surface of copy paper.

If the lifter fails to stop moving up after the sensor lever blocks the lifter position sensor because of some fault, the lifter upper limit sensor (PS103) will turn on to prevent damage to the deck by excess upward movement.

On the other hand, the lifter starts to move down when the deck open switch (SW100) is pushed, and continues to move down until the lifter moves past the sensor lever of the deck paper level upper sensor (PS107; falling edge of the sensor output).

If copy paper is added in this condition, the paper will push down the lever of the deck paper level upper sensor, causing the lifter to move farther down until the stack of copy paper moves past the sensor lever.

Each time copy paper is supplied, the lifter repeatedly moves down until the deck lifter lower limit detecting switch (SW102) is pushed (maximum paper supply position).

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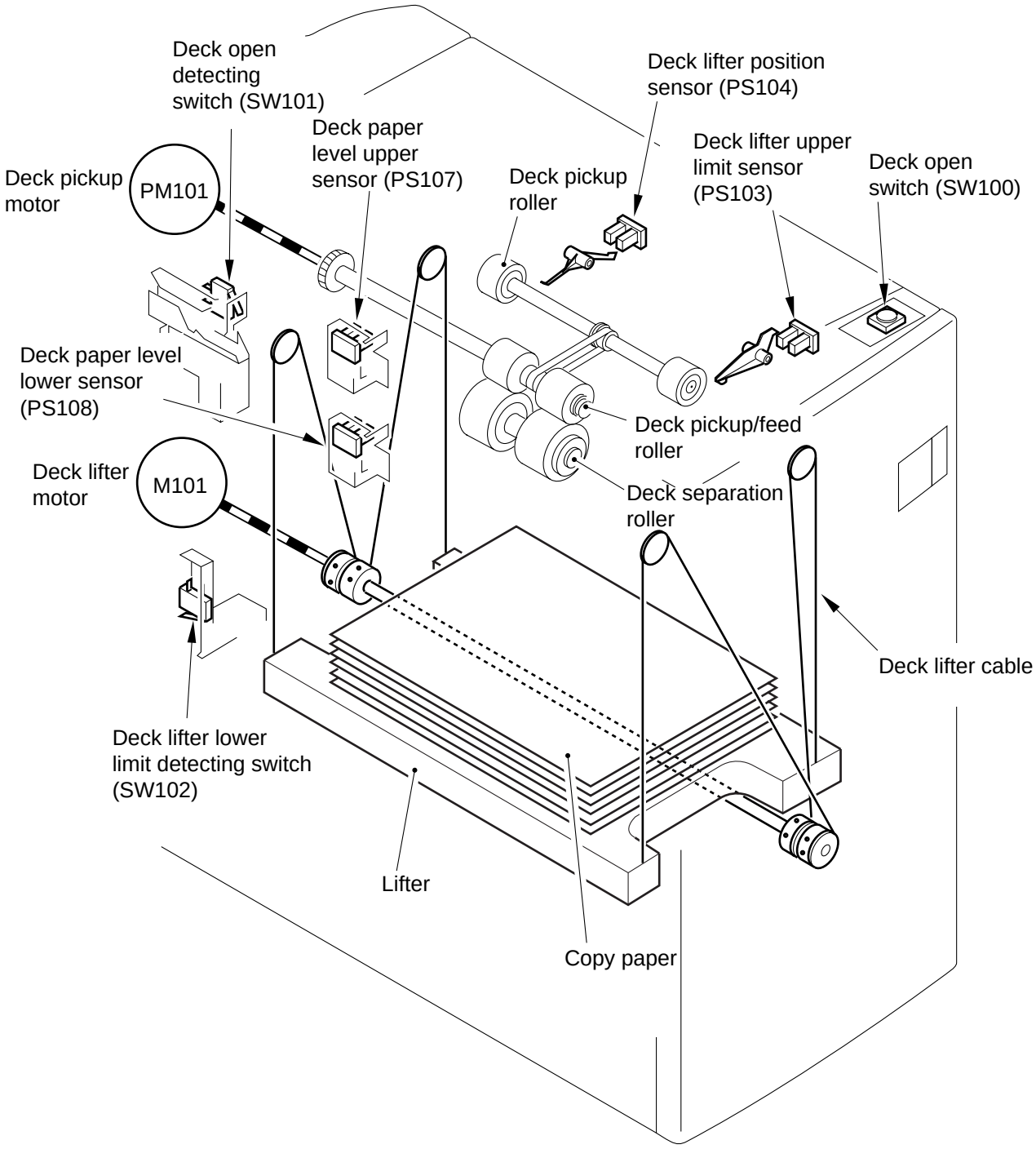

Figure 10-107

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2. Paper Level Indicator on the Deck Front Cover

The drive of the deck lifter motor (M101) is received by a coupling and transmitted to a rack by means of a belt. The rack is equipped with a black belt, which moves up and down within a display window in the deck front cover in keeping with the movement of the rack.

When the level of copy paper decreases and, as a result, the lifter moves up to the pickup position, the area of the black belt inside the display window will gradually increase, thereby indicating the reduction in the level of copy paper (white area).

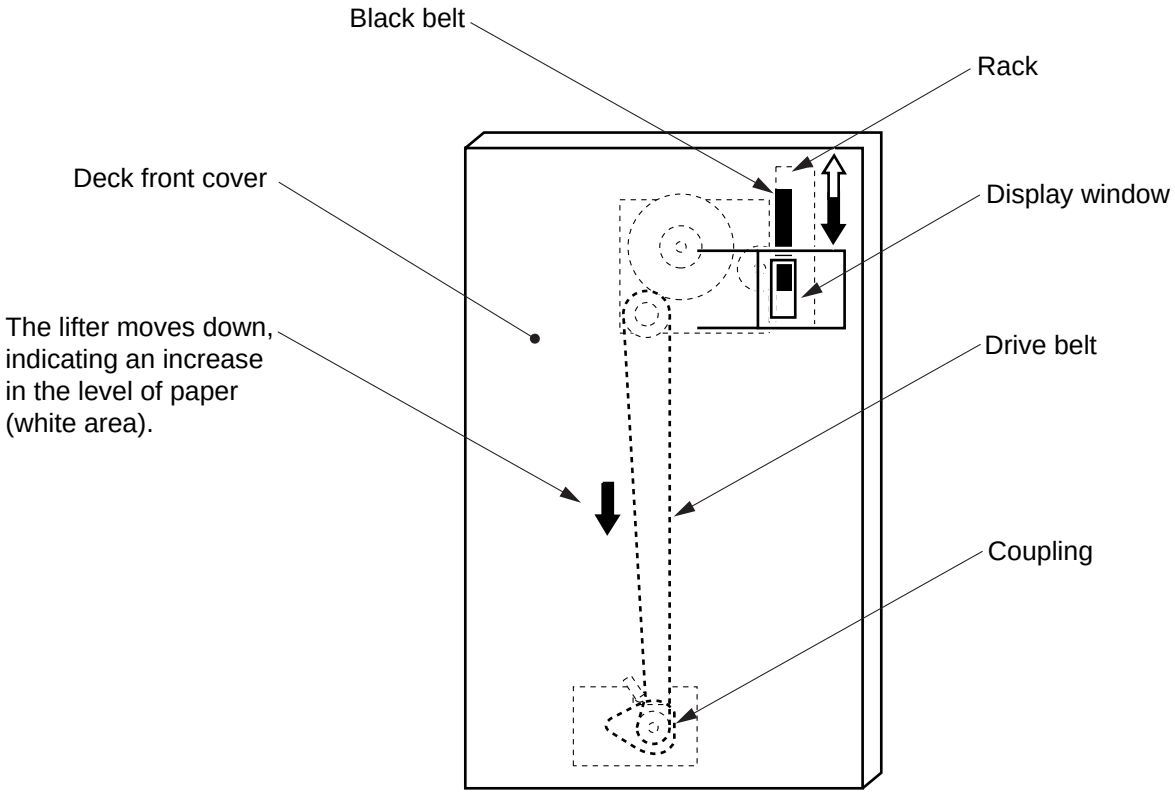

Figure 10-108

E. Opening/Closing the Deck (compartment)

1. Deck Opening/Closing Movement

When the deck open switch (SW100) is pushed, the deck open solenoid (SL102) turns on to release the deck (compartment), causing the deck to move to the front by the force of a spring. At the same time, the deck lifter motor (M101) starts to rotate, and the lifter inside the deck will start to move down.

When the deck (compartment) is pushed into the copier, the deck open sensor (PS109) detects the light-blocking plate of the compartment, causing the lifter to move as far up as the pickup position. When the deck lifter motor rotates in response to deck opening/closing movement, the deck open indicator (LED100) on the open switch PCB will turn on or flash.

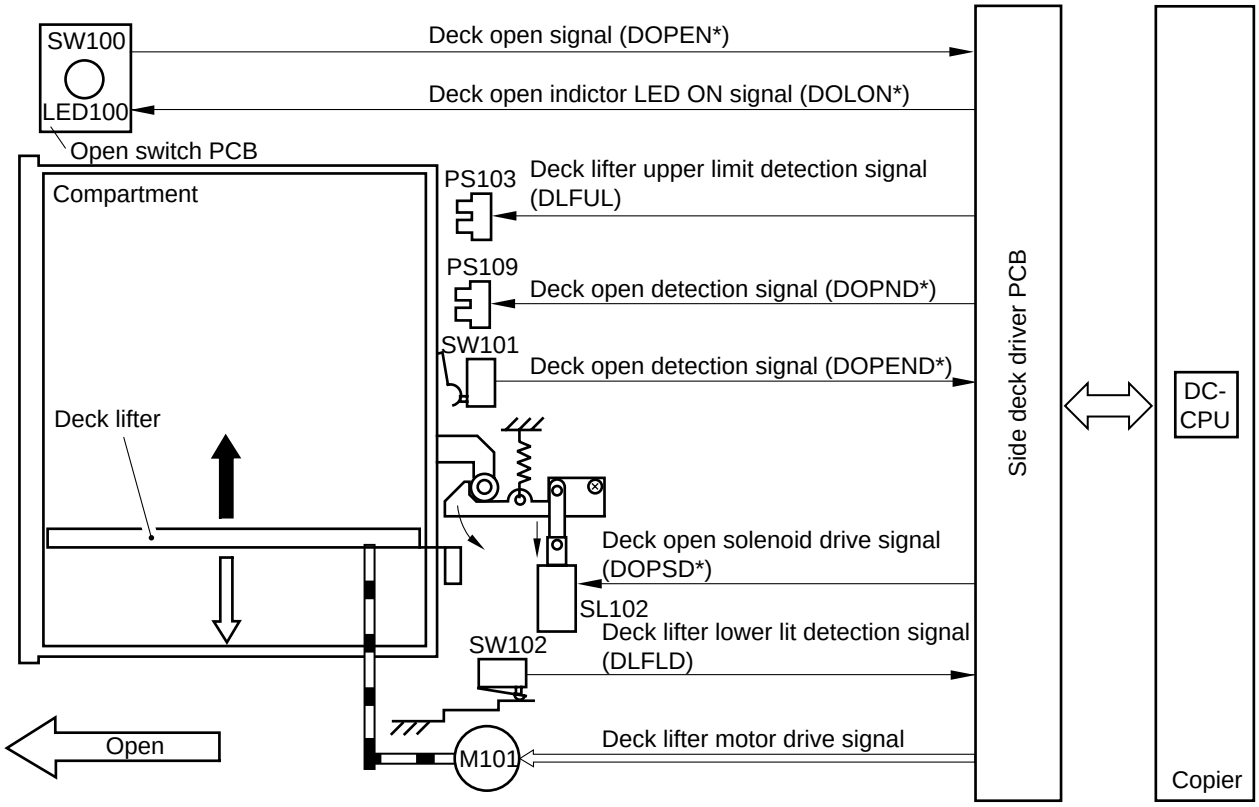

Figure 10-109

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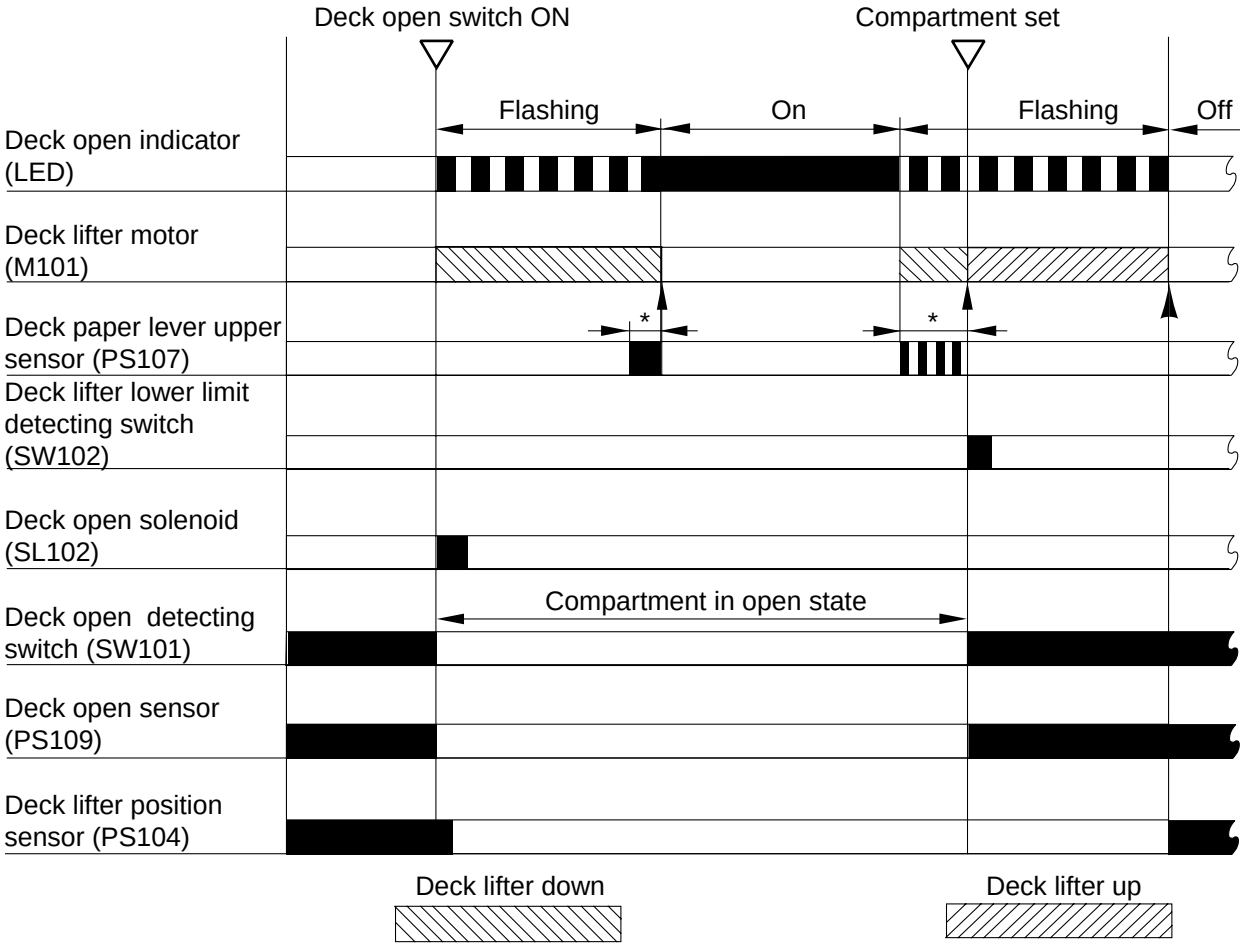
2. Sequence of Operations (deck opening/closing movement)



*Varies according to the level of paper.

Figure 10-110

F. Controlling the Deck Motors

1 Controlling the Deck Pickup Motor (PM101)

The deck pickup motor is a stepping motor controlled by the copier's DC-CPU. The deck pickup motor is turned on and off by controlling the output of the pulse signals from the copier (DPUMA, DPUMA*, DPUMB, DPUMB*); on the other hand, the deck pickup motor is kept on hold by causing the deck pickup motor hold signal to go '1'.

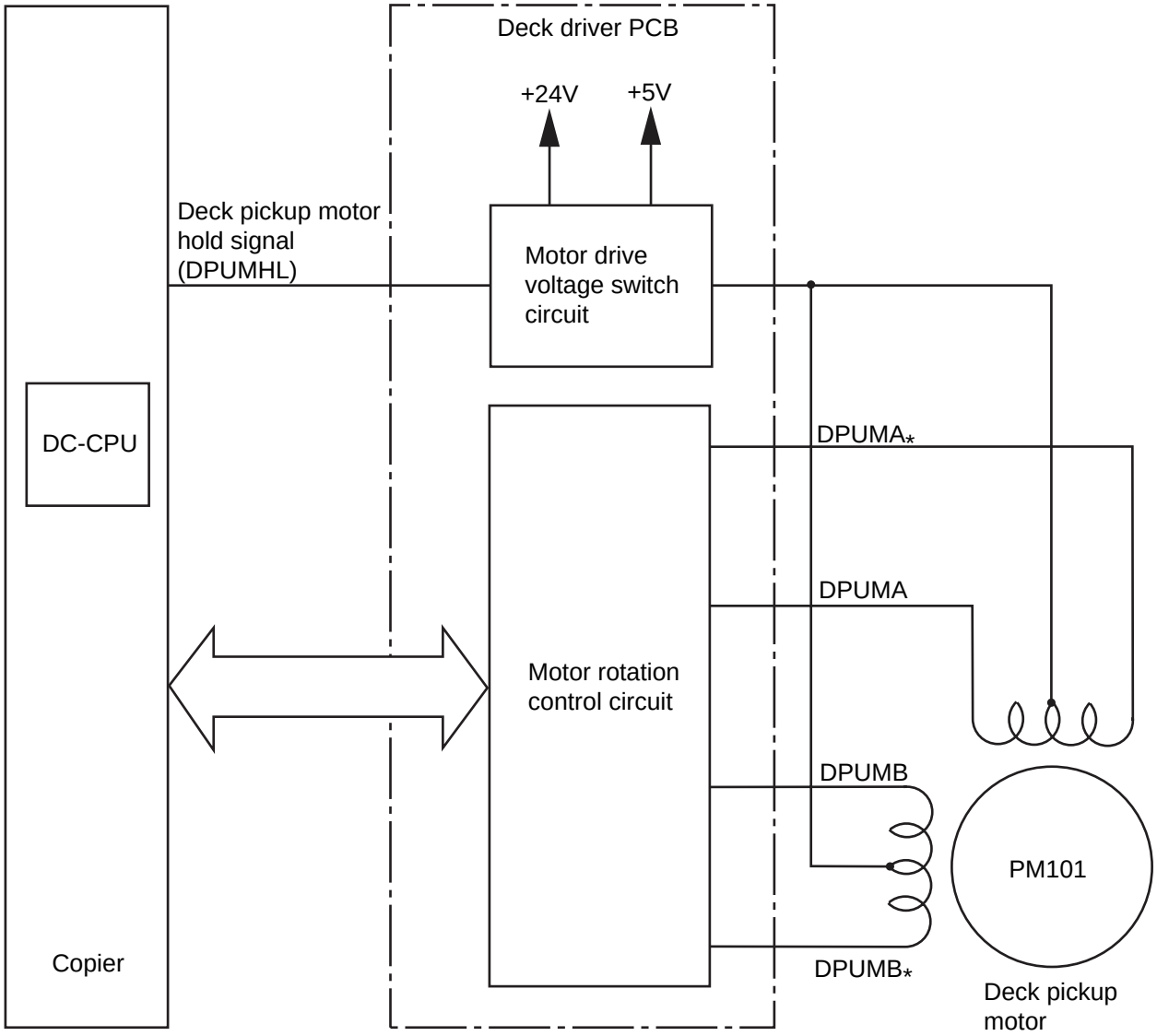


Figure 10-111

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2. Controlling the Deck Lifter Motor (M101)

The deck lifter motor control circuit is found on the side deck driver PCB. (See Figure 8-112 for its block diagram.)

The combination circuit found in the diagram consists of various logic circuits, and the deck lifter motor is rotated forward and in reverse according to combinations of the states of the deck lifter motor drive signal (DLMON*) and the deck lifter up signal (DLFUP*) from the copier's DC-CPU and the output signals from sensors.

If the deck lifter position sensor (PS104) does not turn on within about 60 sec after the deck lifter up signal has been generated for some reason, the copier will indicate 'E041' on its control panel.

[1] Conditions for the Lifter to Move Up

- The deck is connected to the copier. -> The deck set signal (DMNTSD) goes '1'.
- The (compartment) is closed. -> The deck open detection signal (DOPND*) goes '1'.
- The deck (compartment) is closed. -> The deck open detecting switch is ON.
- The deck lifter upper limit detection signal (DLFUL) goes '0'and, in addition, the deck lifer position detecting signal (DLFPD) goes '0'.
- The deck lifter motor drive signal (DLMON*) goes '0'.
- The deck lifter up signal (DLFUP*) goes '0'.

The above conditions cause the lifter to move up.

[2] Condition for the Lifter to Move Down

- The deck (compartment) is open. -> The deck open detection signal (DOPND*) goes '0'.
- The deck lifter lower limit detecting signal (DLFLD) goes '0' and, in addition, the deck lifter position detection signal (DLFPD) goes '0'.
- The deck lifter motor drive signal (DLMON*) goes '0'.
- The deck lifter up signal (DFLFUP*) goes '1'.

The above conditions cause the lifter to move down.

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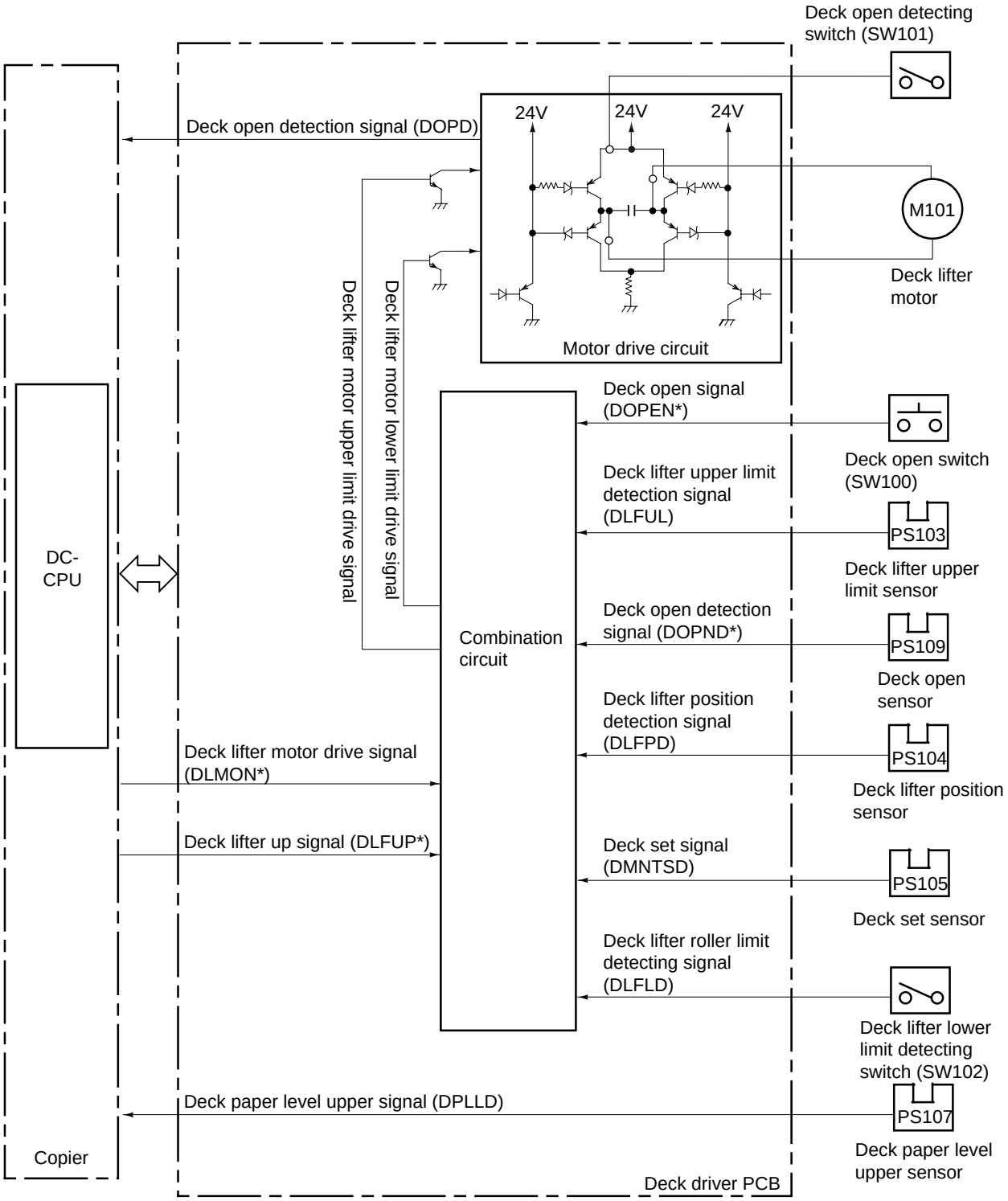

Figure 10-112

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II. DETECTING JAMS

A. Outline

The side paper deck is equipped with the sensor shown in Figure 10-201 to monitor the movement of copy paper. A jam is identified by reading signals from the sensor at such times as programmed in advance in the copier's DC-CPU. When the DC-CPU identifies a jam, it will discharge all paper moving ahead of the jam, stop the ongoing operation, and then indicate jam removal instructions on its control panel.

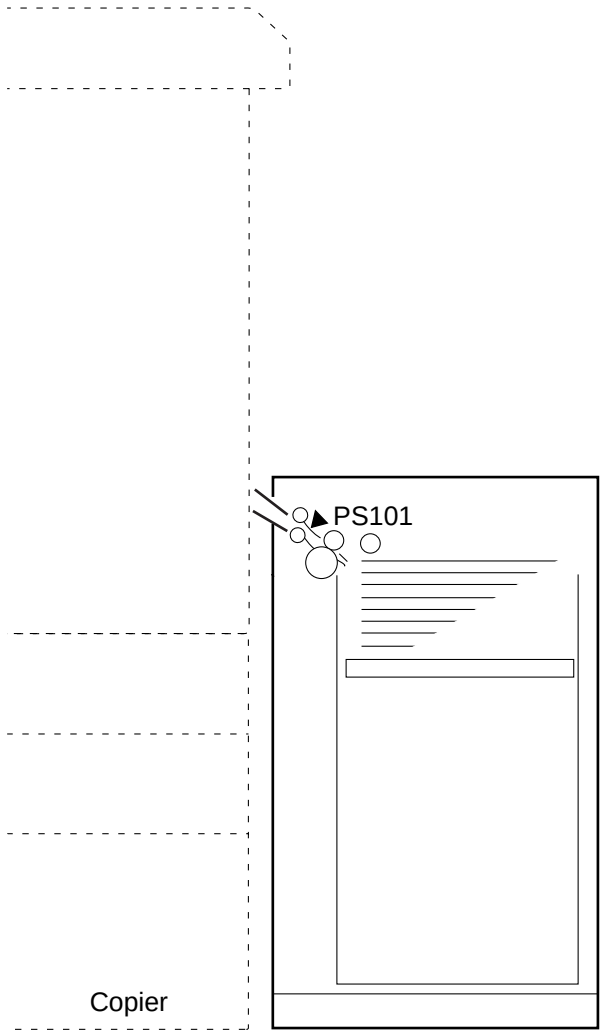

Figure 10-201

Sensor	Name	Description
PS101	Deck pickup sensor	Detects a delay jam.

Table 10-201

The copier's DC-CPU identifies a jam under the following conditions:

· Copy paper is found over the deck pickup sensor (PS101) when the copier's power switch is turned on, at the end of the wait period, or during standby.

Deck Pick/Up/Vertical Delay Jam

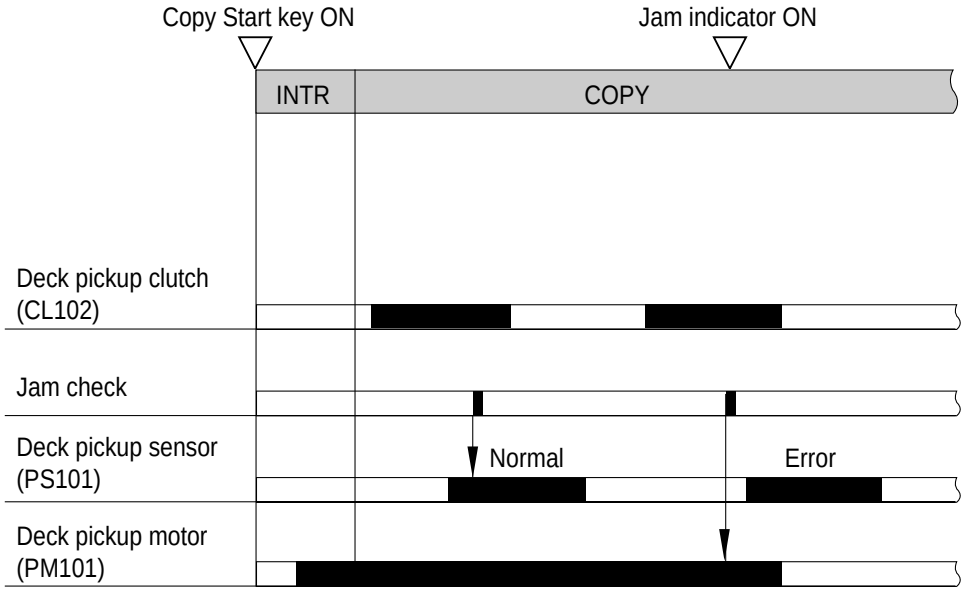

Figure 10-202

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III. DISASSEMBLY/ASSEMBLY

The copier possesses the mechanical characteristics discussed in the following pages; go through the instructions given when disassembling/assembling the copier's parts while keeping the following in mind:

1. ⚠ Disconnect the power plug before disassembly/assembly work.
2. Assemble the parts by reversing the steps used to disassemble them, unless otherwise noted.
3. Identify the screws by type (length, diameter) and location.
4. Do not leave out the toothed washer that comes with one of the mounting screws on the rear cover to protect against static electricity.
5. Do not leave out the washer that comes with the screw used for the grounding wire and the varistor to ensure electrical continuity.
6. Do not operate the machine with any of its parts removed, unless otherwise mentioned.
7. Keep in mind that the laser shutter is designed to close in response to the left door switch (i.e., when it turns off as when the left front cover is opened). If you must operating the copier with the left front cover open, you will need to insert the door switch actuator into the left door switch. (Do not insert a screwdriver or the like into the laser path.)
8. The one-way clutch is in operation while the transfer drum is on the transfer drum frame. Do not rotate the transfer drum while keeping your fingers in an opening of the transfer drum. The transfer drum, on the other hand, will rotate in reverse when it is off the frame. Keep this in mind. (Allowing it to rotate in reverse can damage the transfer blade, attraction brush, and transfer drum side scraper.)

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A. External Covers

[1] Deck releasing grip
[2] Front upper cover
[3] Compartment open/close switch
[4] Front cover
[5] Right cover
[6] Upper cover
[7] Rear cover

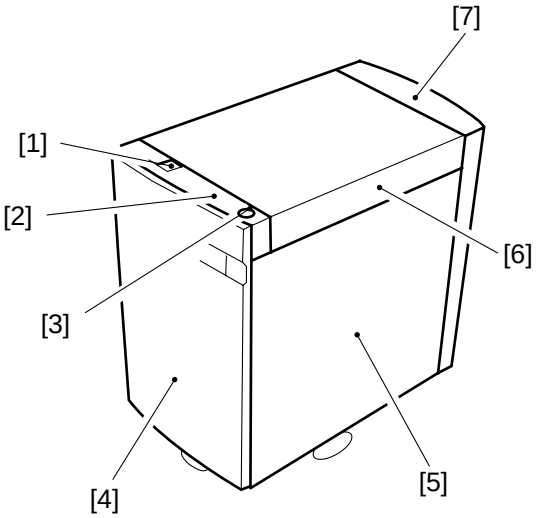

Figure 10-301

1. Removing the Front Cover

1) Disconnect the deck from the copier, and push down the latch plate [2] of the compartment [1] to open the compartment [1].

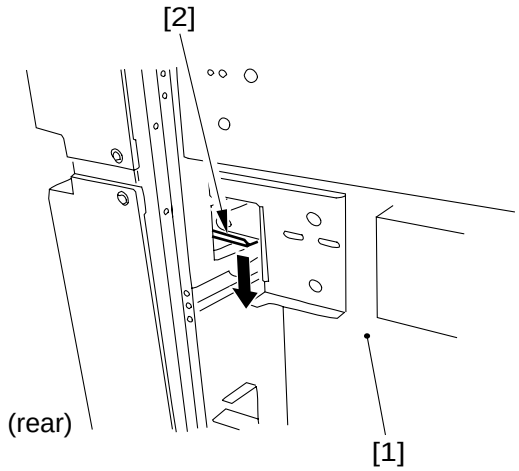

Figure 10-302

2) Loosen the four screws [3], and move the front cover [4] of the deck toward the front to remove.

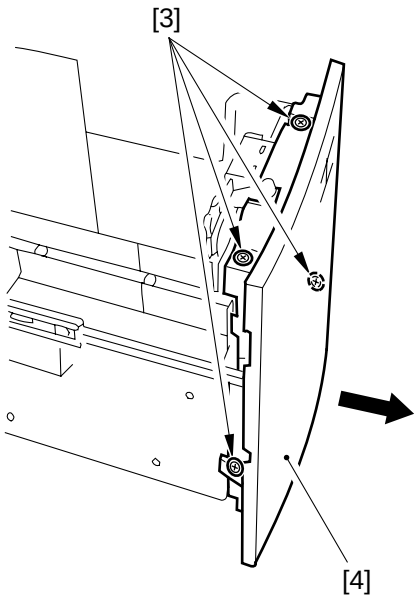

Figure 10-303

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Caution:
When mounting the front cover to the deck, be sure to mach the coupling used to indicate the level of paper.

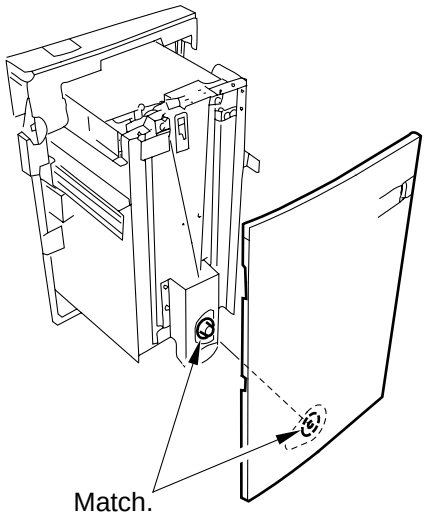

Figure 10-304

Caution:
Mount the front cover so that the gap between the front cover and the front upper cover is 3 ±1 mm.

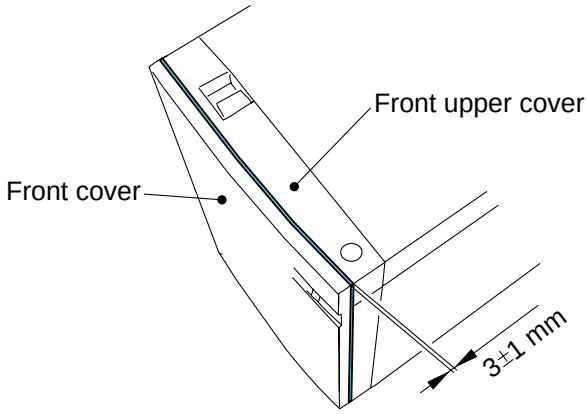

Figure 10-305

Caution:
If you moved the paper level indicator drive belt or the deck lifter behind the front cover after removing the front cover, lower the deck lifter to its lower limit and move the drive belt by hand so that the white area in the window will increase (in the direction of the arrow). (If the deck is started without matching the paper level indication and the deck lifter position, the drive mechanism for paper indication can become damaged.)

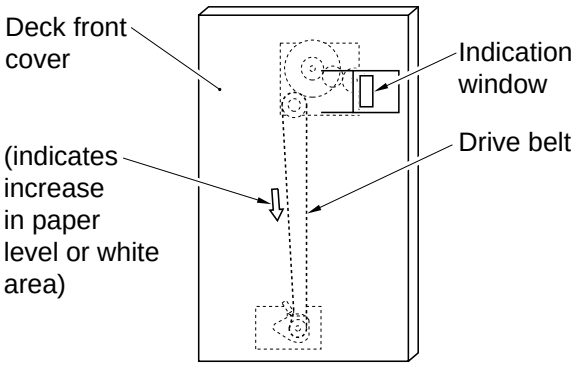

Figure 10-306

2. Removing the Rear Cover

1) Disconnect the deck from the copier, and remove the six screws [1]; then, detach the rear cover [2]. (The screw [1a] has a washer.)

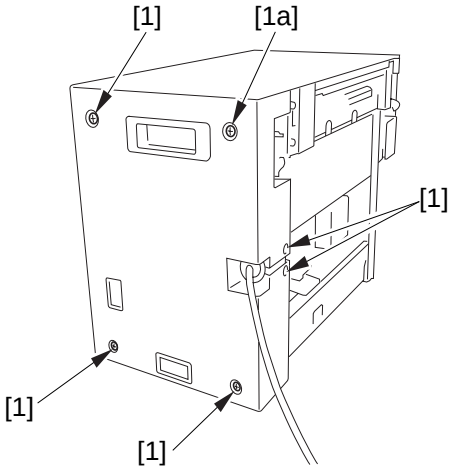

Figure 10-307

3. Removing the Right Cover

1) Open the compartment, and remove the screws [1]; then, move the right cover [2] to the front to detach. (The screw [1a] has a washer.)

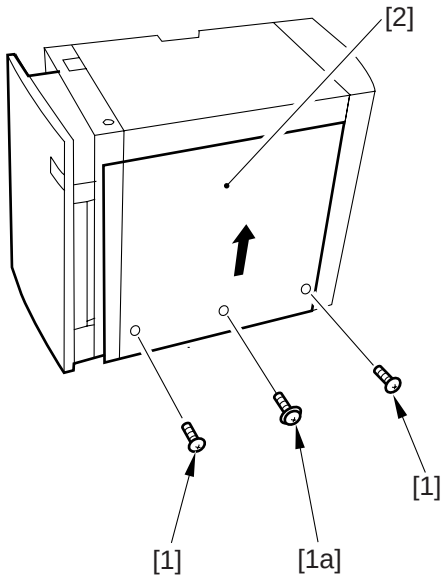

Figure 10-308

4. Removing the Upper Cover

1) Remove the rear cover.
2) Push down the latch plate [2] of the compartment [1] to open the compartment [1].

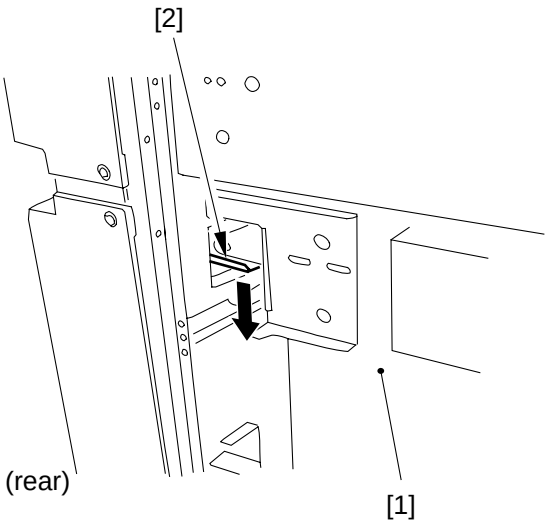

Figure 10-309

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3) Remove the three screws [3], and disconnect the connector [4]; then, detach the front upper cover [5].

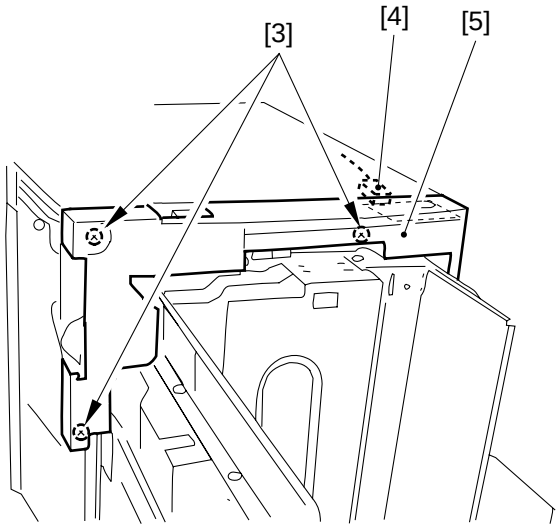

Figure 10-310

4) Remove the two screws [6], and detach the upper cover [7].

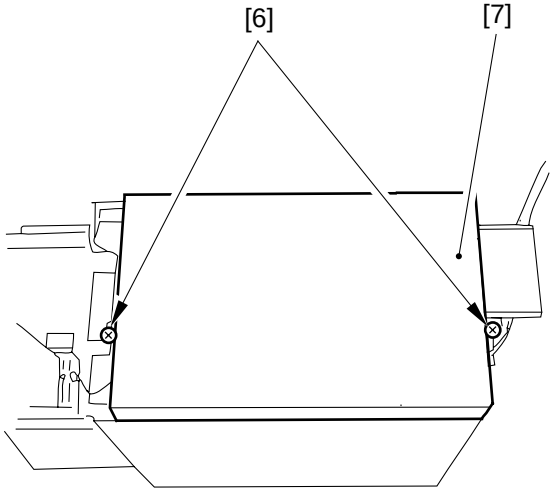

Figure 10-311

B. Paper Deck - Related Work

1. Removing the Deck from the Copier

1) Place copy paper or the like [3] (about 8 cm high) on the floor for placement of the deck [2] (to prevent deformation of the roll support plate [1]).

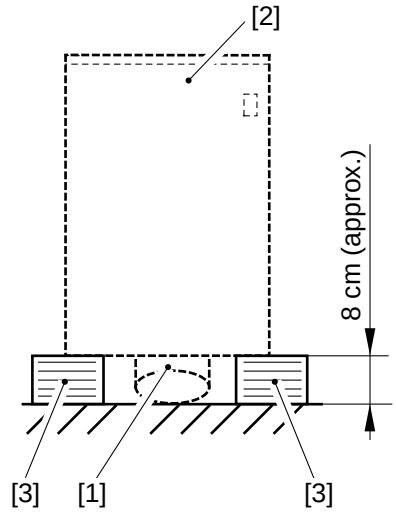

Figure 10-312

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2) Remove the right cover.
3) Remove the four screws [4], and detach the deck [5] from the deck mount [6].

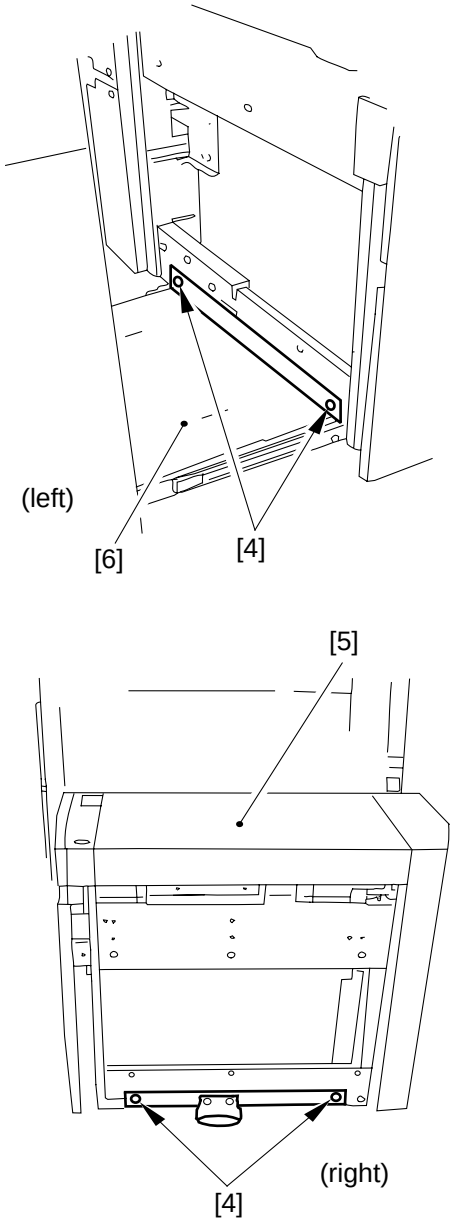

Figure 10-313

4) Holding the deck [7] as shown, place it on the base prepared in step 1).

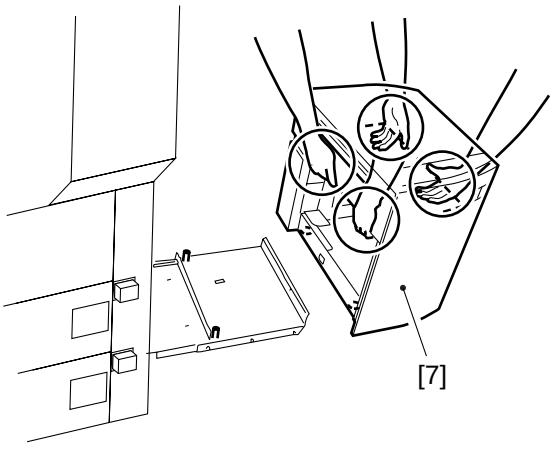

Figure 10-314

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2. Removing the Compartment

1) Place copy paper or the like [3] (about 8 cm high) on the floor for placement of the deck [2] (to prevent deformation of the roll support [1]).

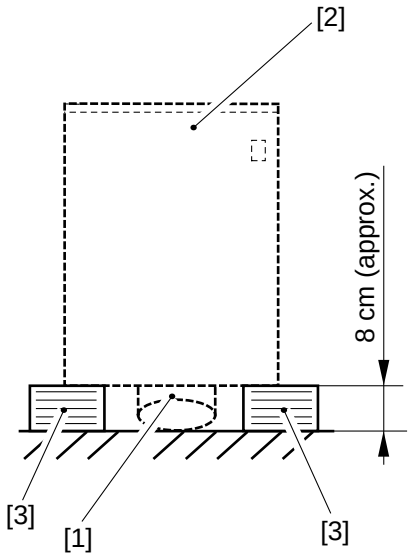

Figure 10-315

2) Disconnect the deck from the copier, and push down the latch plate [5] of the compartment [4] to open the compartment [4].

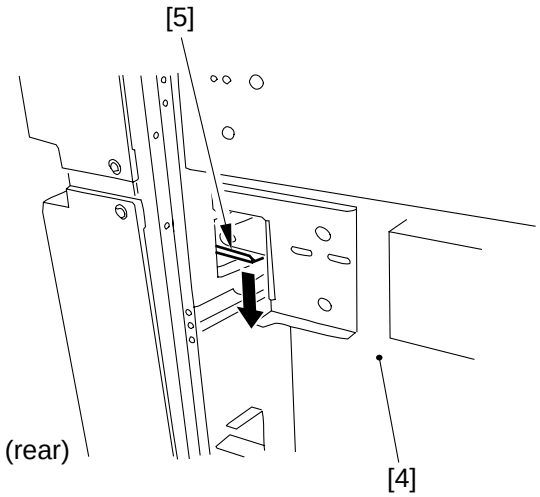

Figure 10-316

3) Remove the right cover.
4) Remove the screw [6] of the harness guide, and disconnect the connector [7].

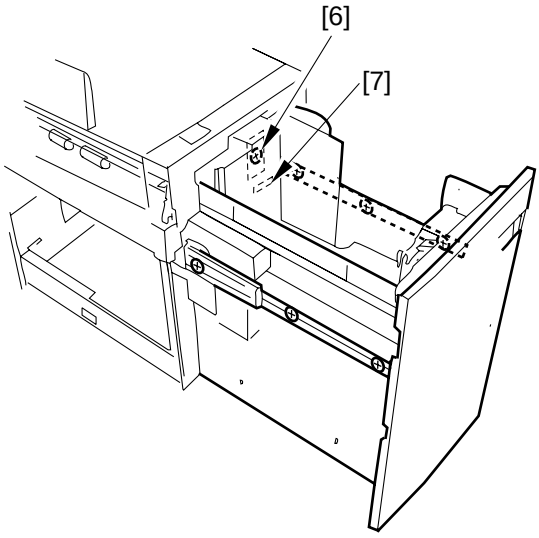

Figure 10-317

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5) Remove the screw [8] and the stopper plate [9]; then, slide the compartment [10] farther to the front.

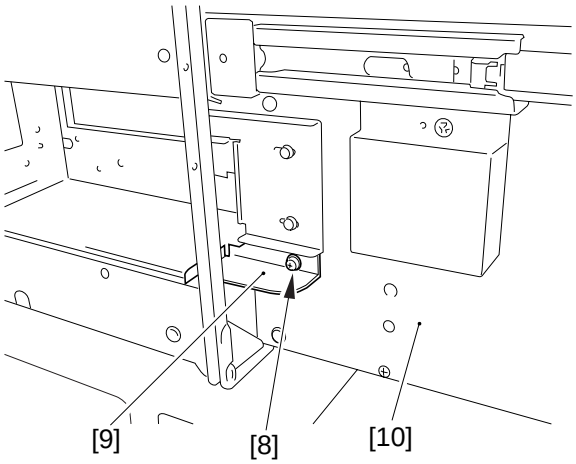

Figure 10-318

6) Remove the three screws [12] each from the left and right of the compartment rails [11]; then, lift the compartment slightly, and detach it to the front.
7) Place the compartment on the base prepared in step 1).

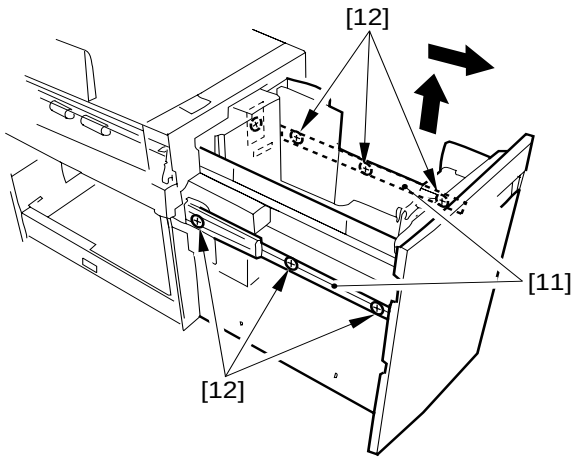

Figure 10-319

3. Changing the Deck Paper Size

If the deck paper size must be changed to comply with the user's request, perform the following:

1) Open the compartment of the deck, and remove all paper.
2) If the lifter of the deck is up, turn on the copier, and push the sensor lever [2] of the paper supply position sensor inside the compartment [1] so that the lifter will move down to its lower limit.

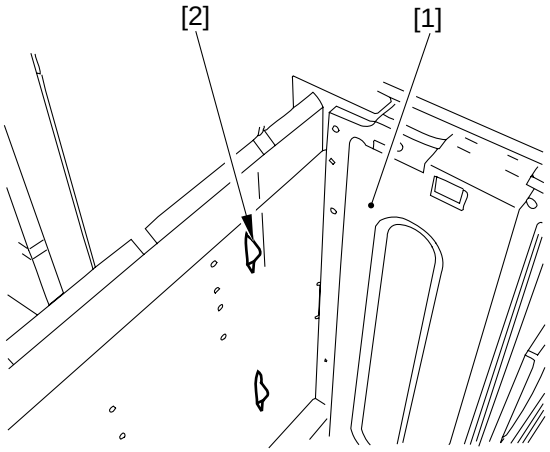

Figure 10-320

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3) Remove the screw [3], and mount the paper rear end guide plate [4] to suit the new paper size. (Do not mount it if for LTR.)
4) Likewise, remove the screw [5], and mount the left/right guide plate [6] to suit the new paper size.
5) Set the new paper size in the copier's service mode (OPTION>ACC>DK-P).

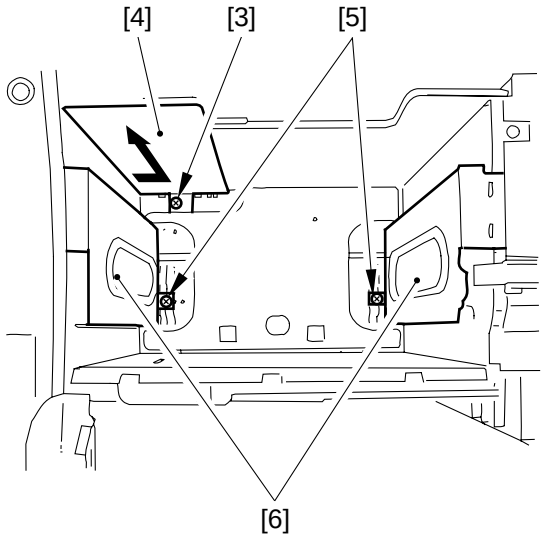

Figure 10-321

4. Adjusting the Deck Registration

If the left/right registration (0 ±2.0 mm standard) is needed, perform the following:

1) Slide out the compartment, and adjust the position of the latch plate [1] of the deck open solenoid (SL02) by turning the two screws [2]. (At this time, use the graduations [3] on the latch plate as a guide.)

After adjusting the left/right registration, be sure to check the position of the front cover. (p. 10-21)

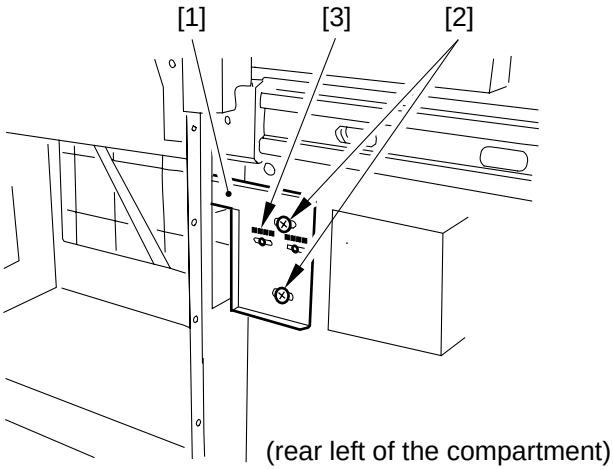

Figure 10-322

5. Adjusting the Position of the Roll

If the compartment cannot be opened or closed smoothly, requiring adjustment of the position of the roll, perform the following:

1) Remove the front cover.
2) Slide out the compartment fully, and turn the four mounting screws [4] on the roll support plate [3] so that the roll [1] is about 3 mm from the floor [2]. (At this time, use the graduations [5] on the front side plate as a guide.)

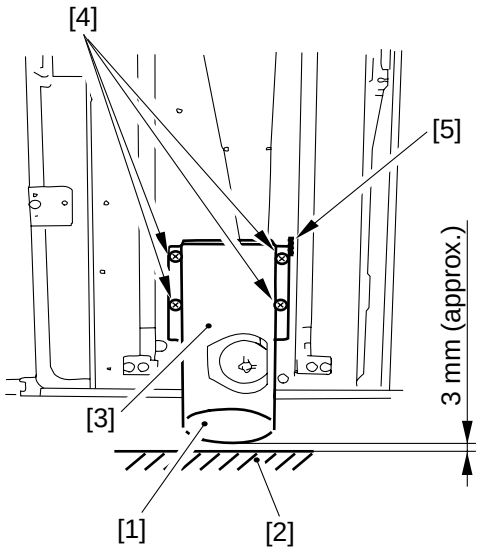

Figure 10-323

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C. Drive System

1. Removing the Deck Pickup Clutch (CL102)

1) Remove the deck pickup unit. (p. 10-34)
2) Disconnect the connector [1], and remove the E-ring [2]; then, detach the deck pickup clutch [3].

Caution:

When mounting the pickup clutch, be sure to put the clutch in the slip stop [4]. Be sure also to hook the harness on the U groove [5] of the guide.

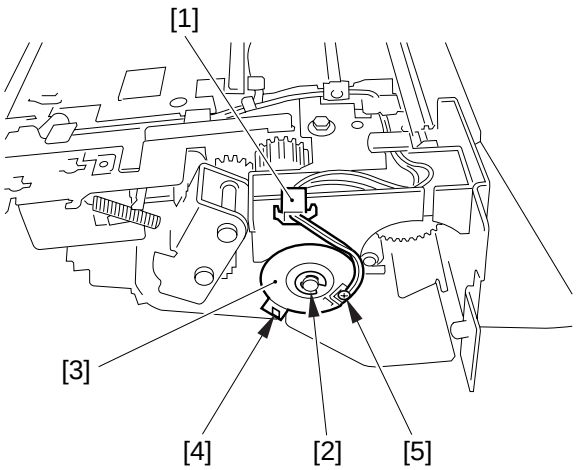

Figure 10-324

2. Removing the Deck Pickup Motor Assembly

1) Disconnect the deck from the copier; then, remove the six screws, and detach the ear cover.
2) Disconnect the two connectors [1] and remove the four screws [2] of the deck driver PCB; then, detach the deck pickup motor assembly [3].

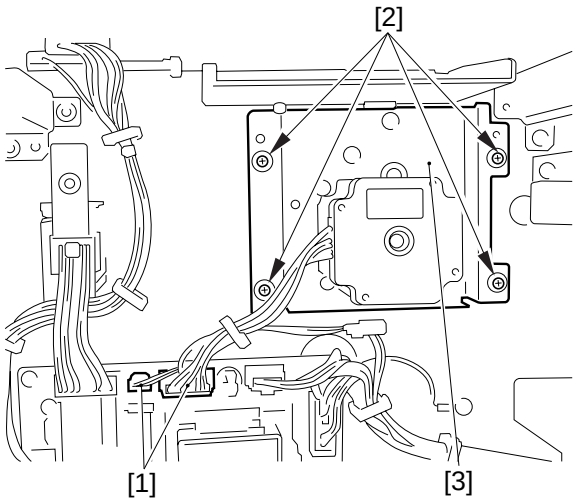

Figure 10-325

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3. Removing the Deck Lifter Motor (M101)

1) Open the compartment of the deck, and remove all copy paper.
2) Turn on the copier. If the lifter of the deck is in up position, press the sensor lever [1] of the paper supply position inside the compartment to stop the lifter about 7 cm from the bottom of the compartment base plate. Then, insert a hex wrench into the hole of the lifter drive shaft [3] to hold it in place (against turning).

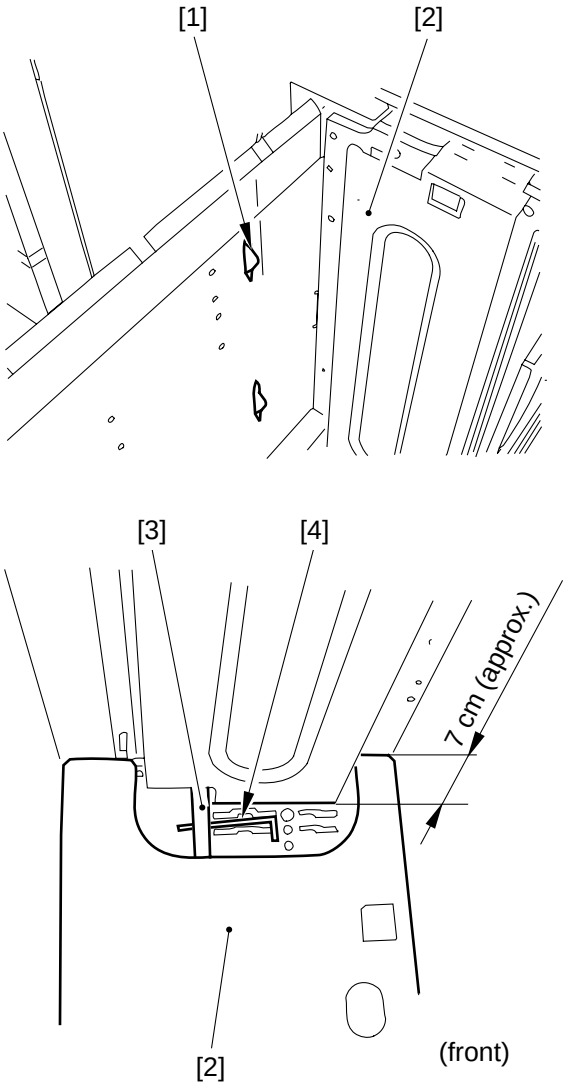

Figure 10-326

3) Remove the compartment from the deck. (p. 10-25)
4) Disconnect the connector [5], and remove the five screws [6]; then, remove the deck lifter motor unit [7].

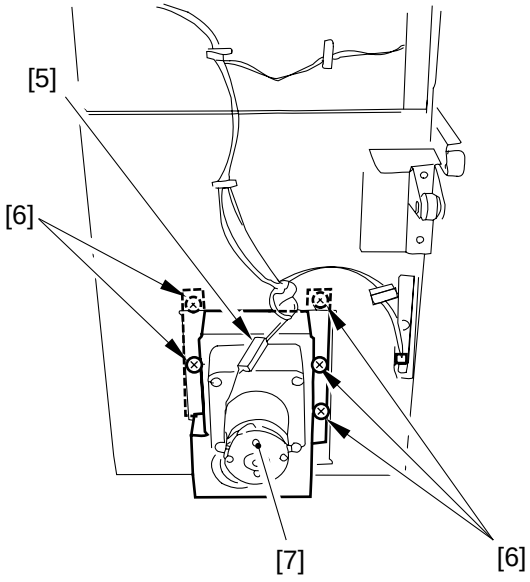

Figure 10-327

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4. Removing the Lifter Cable (front of the deck)

1) Open the compartment of the deck, and remove all copy paper.
2) Remove the screw, and detach the paper rear guide plate from the inside of the compartment.
3) Push down the sensor lever [1] of the paper supply position inside the compartment to lower the lifter so that the holes in the left and right of the compartment side plate and the holes in the left and right of the lifter match; then, insert two long screwdrivers [2] through the holes (to position the lifter). At this time, try matching the top face of the lifter against the scribe line on the compartment left plate to facilitate the work.

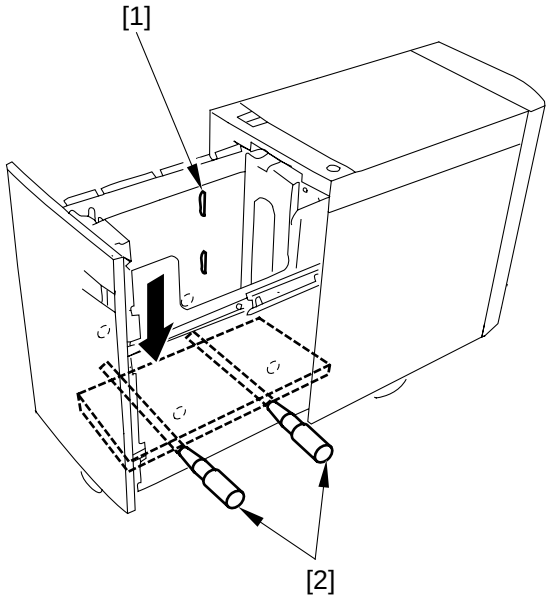

Figure 10-328

4) Remove the front cover of the deck.
5) Remove the four screws [3], and detach the roll support plate [4].

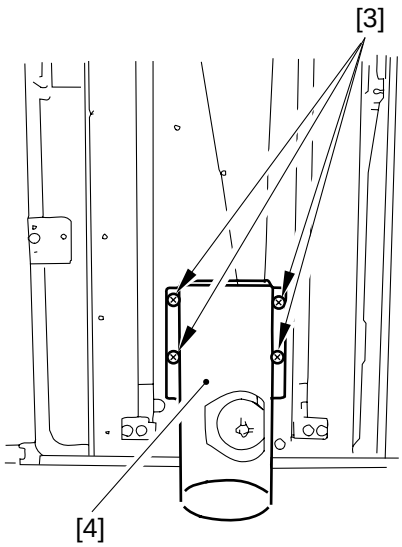

Figure 10-329

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6) Remove the coupling [5] and the E-ring [6]; then, detach the pulley cover [7].
7) Remove the two screws [8] and the cable fixing plate [9] on the left side; then, detach the lifter cable [10] on the outside.
8) Remove the two screws [11] and the cable fixing plate [12] on the right side; then, detach the lifter cable [13] on the inside.

9) To remove the lifter cable [13] from the pulley [14] on the inside, remove the two set screws [16] of the pulley [15] on the outside to detach the pulley [15] on the outside in advance.

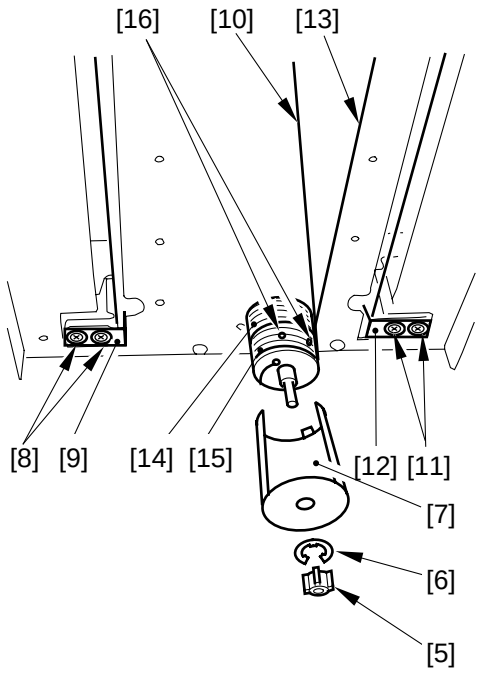

Figure 10-330

5. Removing the Lifter Cable (deck rear)

1) Open the compartment of the deck, and remove all copy paper.
2) Remove the screw, and detach the paper rear end guide plate of the compartment.
3) Push the sensor lever [1] of the paper supply position inside the compartment to lower the lifter so that the left and right holes in the compartment side plate and the left and right holes in the lifter match; then, insert two long screwdrivers [2] through the holes. At this time, try matching the top face of the lifter against the scribe line on the compartment left side plate to facilitate the work.

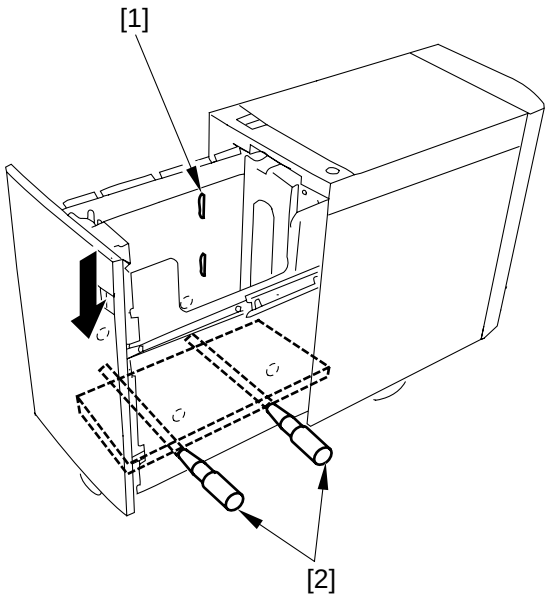

Figure 10-331

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4) Remove the compartment.
5) Remove the screw [3], and detach the sensor covers upper and lower [4].

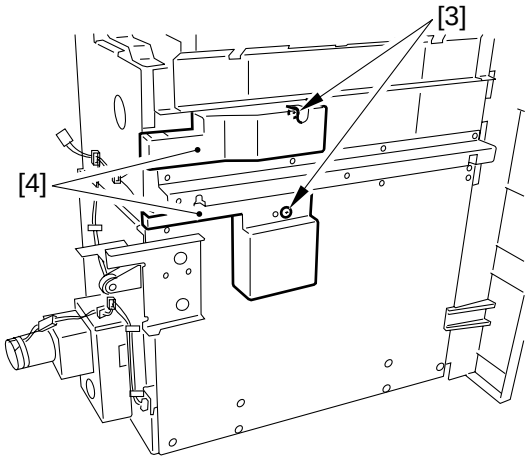

Figure 10-332

6) Disconnect the four connectors [5], and remove the six screws [6]; then, detach the metal plate [7].

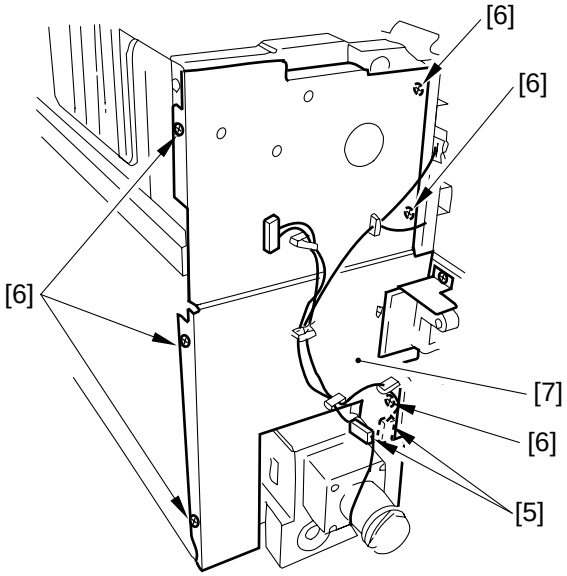

Figure 10-333

7) Insert a hex wrench [9] or the like into the hole of the lifter drive shaft [8] to hold it in position (against turning).

Caution:

If the lifter drive shaft is not held in position as instructed, the lifer cable will become slack when the lifter motor unit is removed. Take full care.

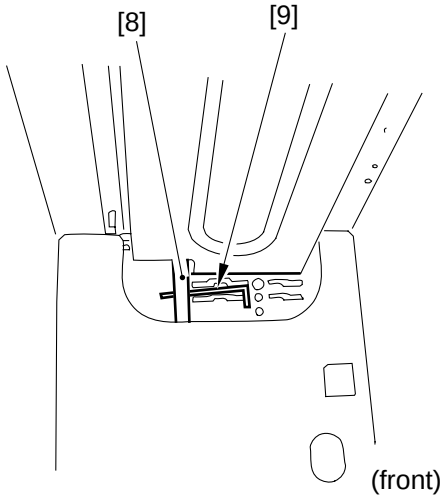

Figure 10-334

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8) Remove the five screws [10], and detach the lifter motor unit [11].

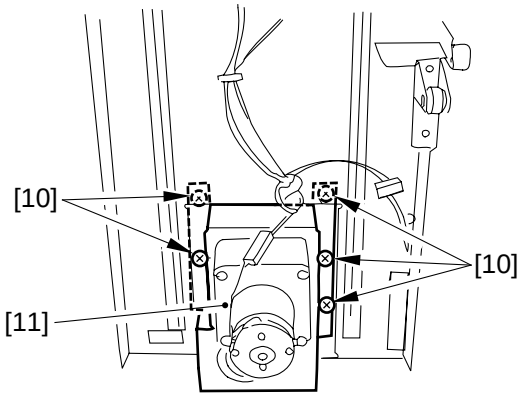

Figure 10-335

6. Routing the Lifter Cable

1) Check to make sure that the lifter drive shaft and the lifter are held in position with a hex wrench [1] and long screwdrivers [2] as shown.
2) Secure the cable fixing plate [3] to the lifter with two screws.
3) Hook the lifter cable on the upper pulley [4].
4) Hook the ball of the lifter cable on the pulley [5] of the lifter drive shaft, and wind the cable along the groove about 1.5 times by hand. At this time, be sure to keep the lifter cable taut until the long screwdrivers used to hold the lifter in place are lifted as far up as they move.
5) Secure the pulley to the lifter drive shaft with two set screws [6].
6) Secure all pulleys that have been removed to the lifter drive shaft, and measure the distance from the base plate of the compartment to the top face of the lifter to make sure that the lifter is level.

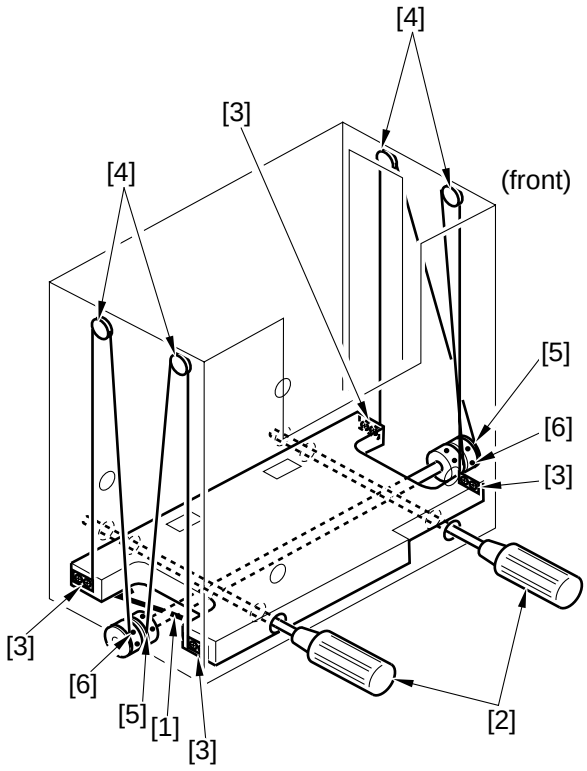

Figure 10-336

D. Feeding System

1. Removing the Deck Pickup Unit

1) Remove the upper cover.
2) Disconnect the two connectors [1], and remove the five screws [2].
3) Remove the deck pickup unit [3].

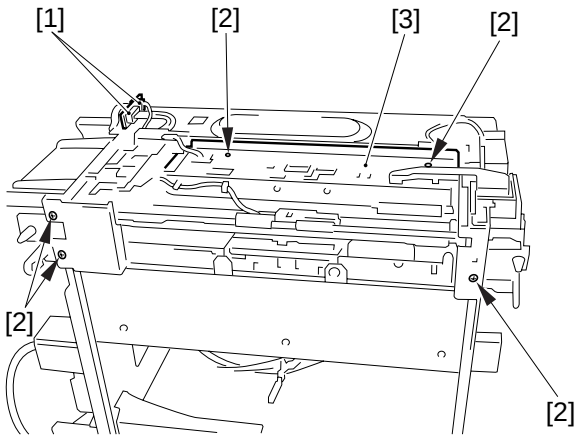

Figure 10-337

Caution:

When mounting the deck pickup unit [3], be sure to tighten the three screws shown in the figure first.

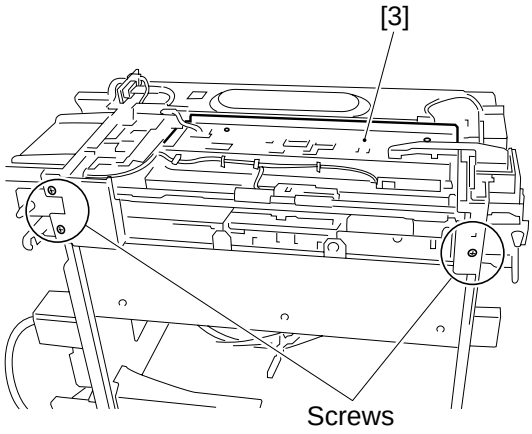

Figure 10-338

2. Removing the Deck Pickup Roller

1) Remove the deck pickup unit.
2) Turn over the deck pickup unit, and remove the resin ring [1] (one each); then, remove the deck pickup roller [2].

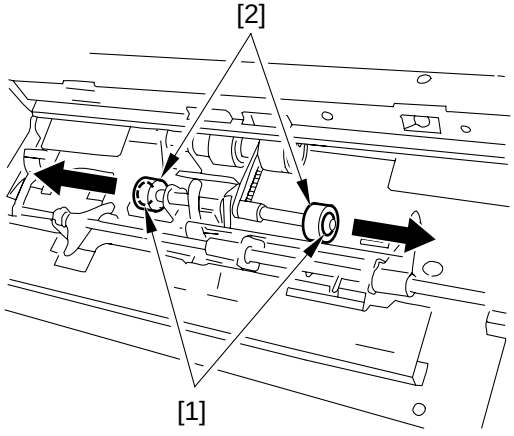

Figure 10-339

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3. Orientation of the Deck Pickup Roller

When mounting the deck pickup roller [1] at the front, be sure that the marking [2] on the collar (silver-colored) is at the front and the marking [3] on the side of the roller is at the rear.

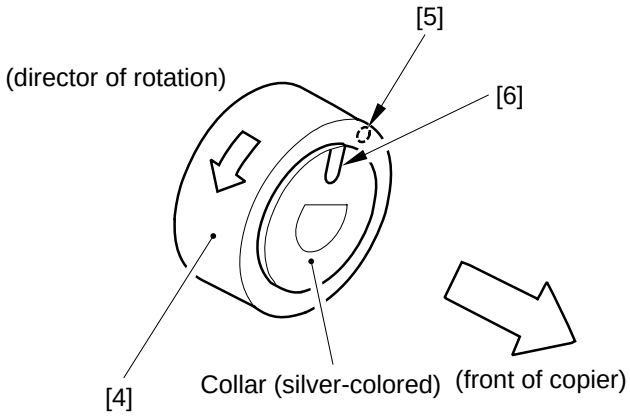

Figure 10-340

When mounting the deck pickup roller [4] at the rear, be user that the marking [5] on the side of the roller and the marking [6] on the side of the collar (gold-colored) are at the rear.

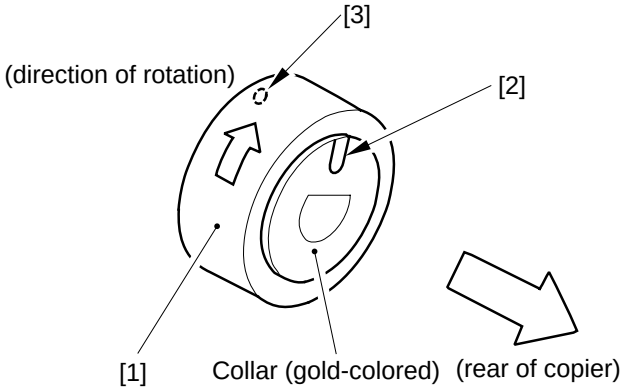

Figure 10-341

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4. Removing the Deck Pickup/Feed Roller

1) Remove the deck pickup unit.
2) Turn over the deck pickup unit.
3) Remove the resin ring [1], and remove the deck pickup/feed roller [2] and the drive belt [3] to the front.

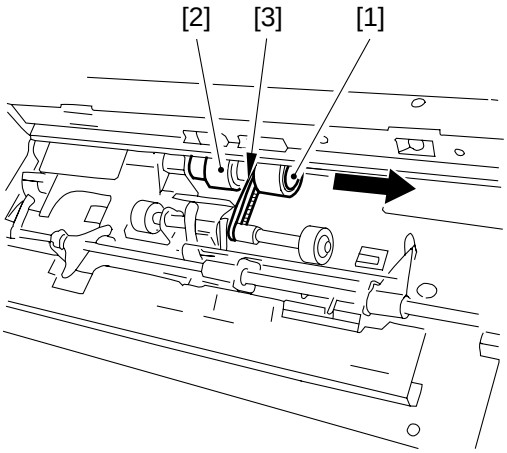

Figure 10-342

5. Orientation of the Deck Pickup/ Feed Roller

When mounting the deck pickup/feed roller [1], be sure that the belt pulley [2] is at the front.

When mounting the pickup/feed roller rubber to the pickup/feed roller shaft, be sure that the marking [3] is at the rear.

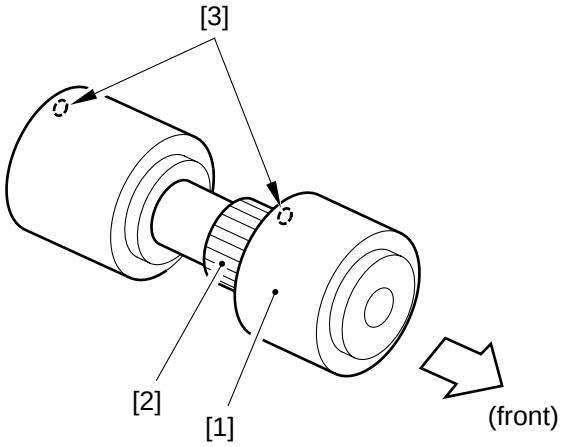

Figure 10-343

6. Removing the Deck Separation Roller

1) Disconnect the deck from the copier, and remove the two screws [1]; then, detach the separation roller support plate [2].

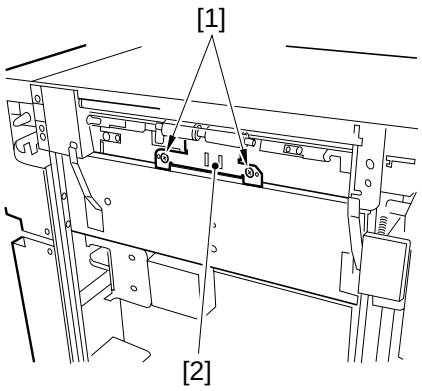

Figure 10-344

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2) Remove the joint, and remove the deck separation roller [3].

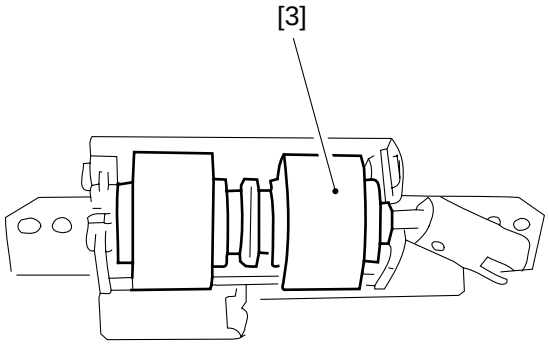

Figure 10-345

Caution:

The urethane sponge used on the deck separation roller is initially pink in color, and changes to orange and to yellow over time. This phenomenon is accelerated when the sponge is exposed to light, and is a general characteristic of urethane sponge. There is no difference in performance, and the part is not identified by color.

7. Adjusting the Deck Separation Roller Pressure

If double feeding or pickup failure occurs when pickup is from the side paper deck, adjust the position of the pressure spring of the deck separation roller.

- If pickup failure occurs, move the spring in the direction of arrow A.
- If double feeding occurs, move the spring in the direction of arrow B.

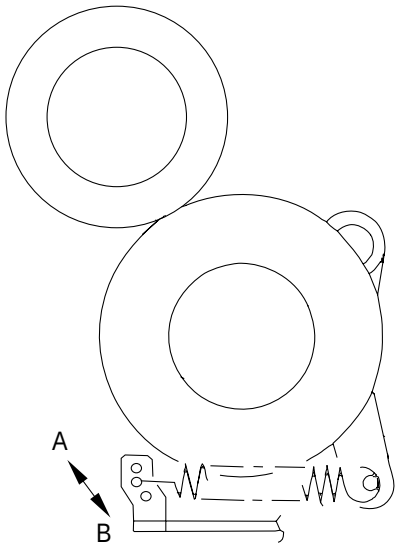

Figure 10-346

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8. Position of the Deck Pickup Solenoid (SL101)

Take note of the positions of the two fixing screws [2] on the solenoid [1] with reference to the graduations on the support plate before removing the solenoid. Or, mark the position of the solenoid with a scriber on the support plate.

If you are mounting the solenoid on its own, be sure to secure it in place where it was before removal.

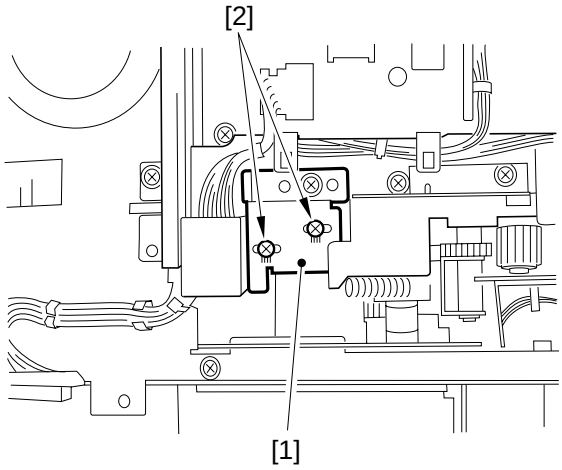

Figure 10-347

E. Electrical System

1. Removing the Deck Driver PCB

1) Disconnect the deck from the copier; then, remove the six screws, and detach the rear cover.
2) Disconnect the seven connectors [1], and remove the four screws [2]; then, detach the deck driver PCB [3].

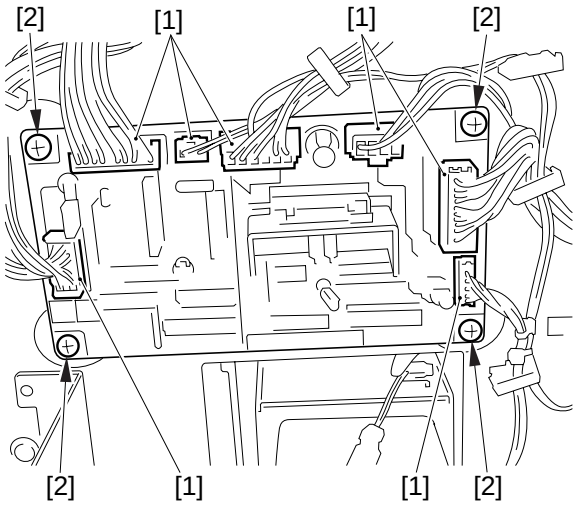

Figure 10-348

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2. Removing the Deck Open Switch PCB

1) Disconnect the deck from the copier, and push the latch plate [2] of the compartment [1] to open the compartment [1].

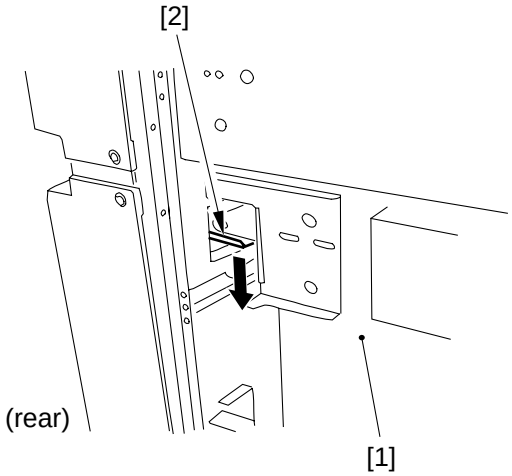

Figure 10-349

2) Remove the three screws [3], and disconnect the connector [4]; then, detach the front upper cover [5].

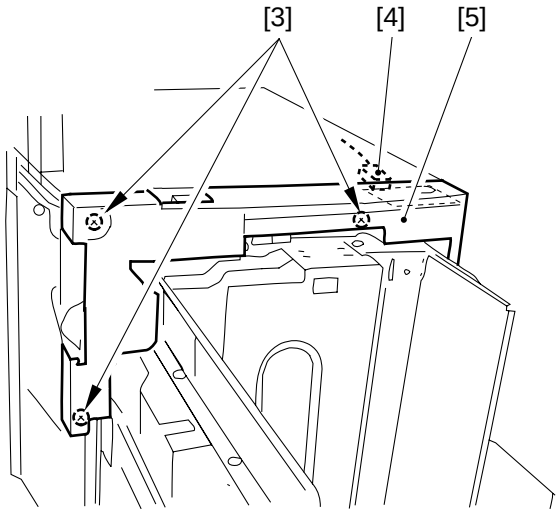

Figure 10-350

3) Remove the two screws [6], and detach the deck open switch PCB [7].

Caution:

When mounting the front upper cover, be sure not to trap the harness by the deck open switch PCB, and be sure to connect all connectors.

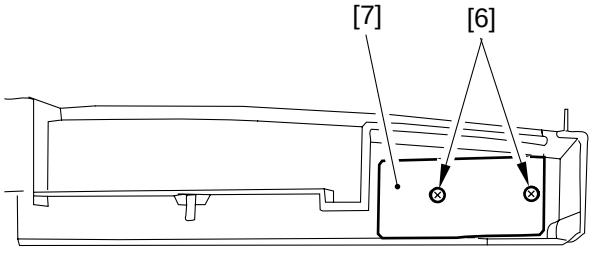

Figure 10-351

CHAPTER 11

INSTALLATION

This chapter explains how to install the copier and its accessories.

I. SELECTING THE SITE 11-1
II. INSTALLATION 11-4
- A. Unpacking 11-4
- B. Removing the Fixing Materials and Mounting the Waste Toner Collection Case 11-7
- C. Supplying Fixing Oil 11-9
- D. Mounting the Drum Cleaner and Setting the Environment Switch 11-11
- E. Supplying Toner 11-15
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V. INSTALLING THE CONTROL CARD UNIT-V 11-31
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I. SELECTING THE SITE

The site of installation must satisfy the following; if possible, visit the user's before the delivery of the machine:

1. There must be a power outlet that may be used exclusively for the copier. It must offer the rated voltage (±10%), and must allow grounding of the copier.
2. The temperature must be between 15°/59° and 30°C/86°F, and the humidity must be between 5% and 80%. Avoid an area near a water faucet, water boiler, humidifier, and refrigerator.

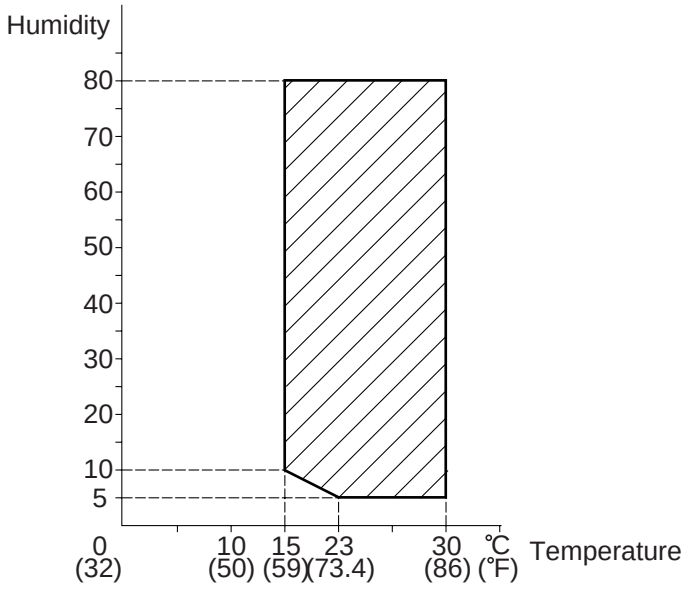

Figure 11-101

3. Avoid areas near a source of fire and areas subject to dust, ammonium gas, and direct sunshine. As necessary, provide curtains to block out the sun.
4. The level of ozone generated by the machine in operation should not affect the health of people working around it. However, some may find it unpleasant. Be sure to choose an area where ventilation is good.
5. The floor must keep the machine level, with all its feet remaining in contact.

6. There must be at least 100 cm /39 in from any wall, providing adequate space for maintenance work. See the following figures for spatial requirements.

■ Copier Only

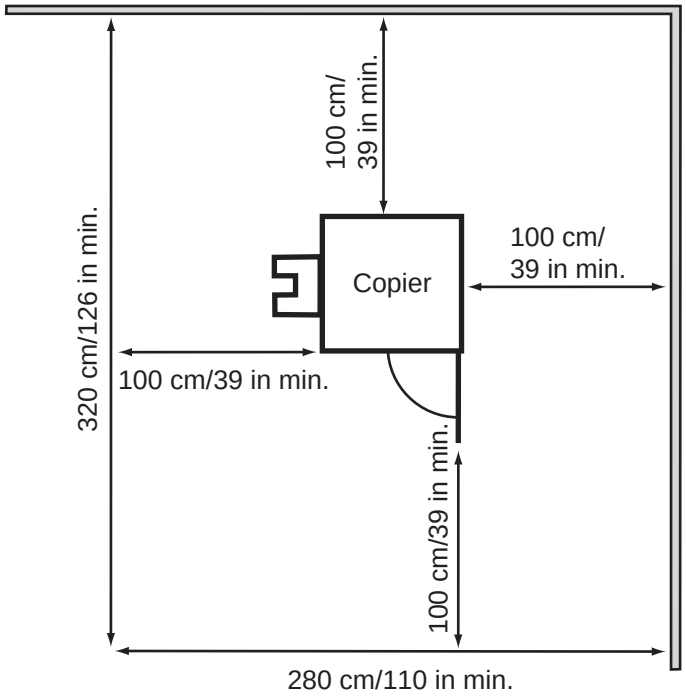

Figure 11-102

■ Copier + Stapler Sorter-F1, Buffer Path Unit 1 + Paper Deck-E1

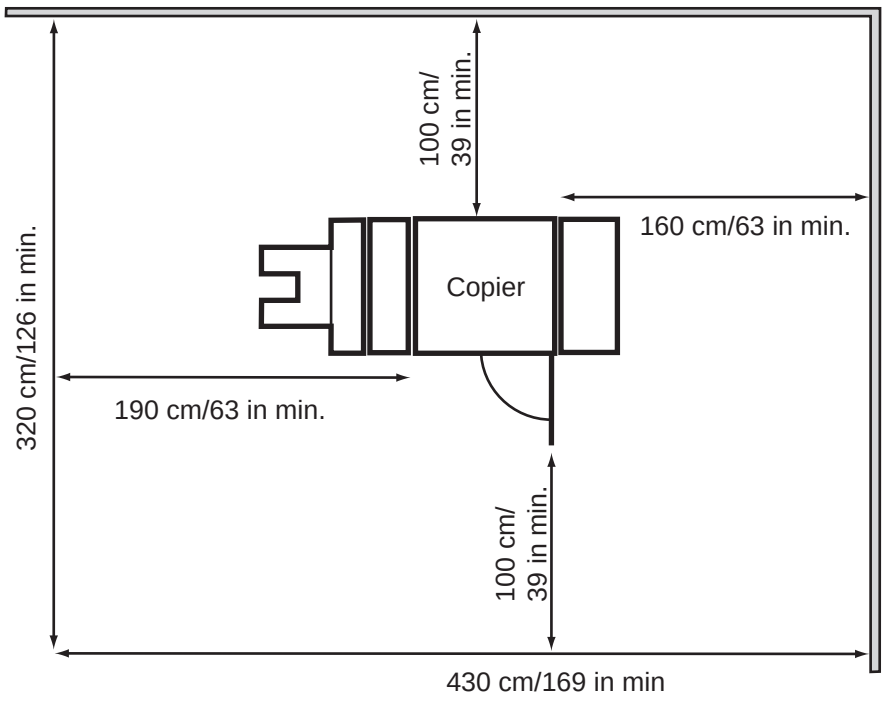

Figure 11-103

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7. If multiple copies exist, arrange them so that the exhaust from one will not directly be drawn into another.
   In addition, avoid installing the machine near the air vent of the room.

In general, the silicone gas (vaporized silicone oil from the fixing assembly) generated by a copier tends to soil its corona charging wire, shortening its life. Keep in mind that this phenomenon is particularly conspicuous in a low-humidity environment.

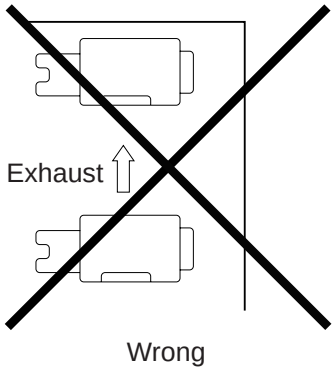

Figure 11-104

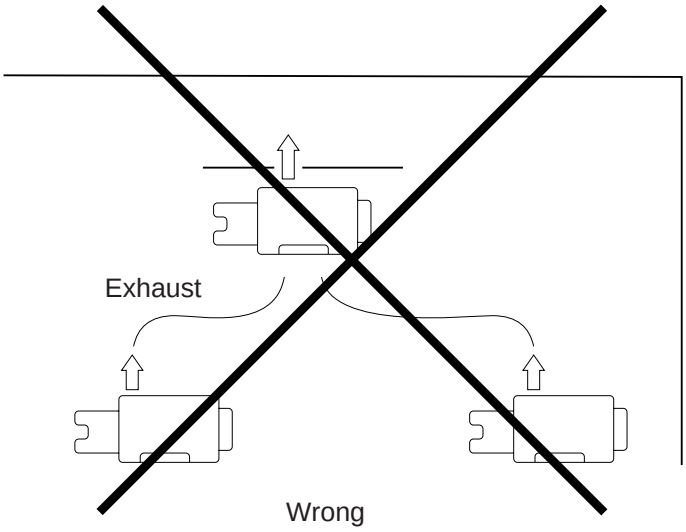

Figure 11-105

II. INSTALLATION

When a piece of metal is brought from a cold to warm place, droplets of water tend to form on its surface. This phenomenon is known as *condensation*, and a copier suffering from condensation tends to produce blank copies.

If you have brought in the copier from a cold to warm place, leave it alone for at least an hour so that it will become used to the new environment before unpacking it.

A. Unpacking

1) Unpack the copier.
2) Tear open the plastic bag covering the copier, and peel off the fixing tape; then, pull out the grips from the copier.
3) Lift the pickup side (copier's right) about 5 cm while working in a group of two, and pull out the cushioning material from the bottom in the direction of the arrow.

Caution:
The copier weighs about 300 kg/661 lb. Take adequate care when performing the work that follows.

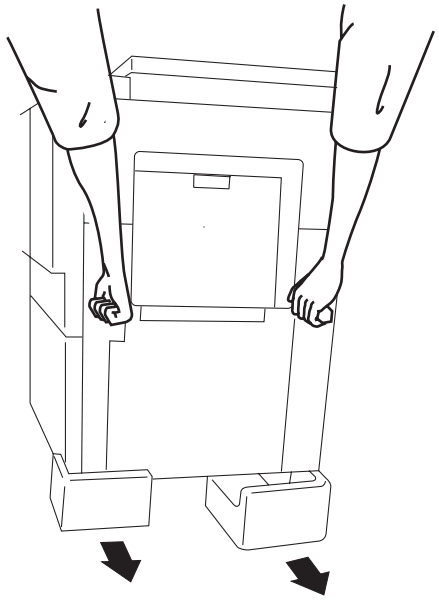

Figure 11-201

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4) Working in a group of two, lift the delivery side (copier's left) about 5 cm, and remove the cushioning material in the direction of the arrow.

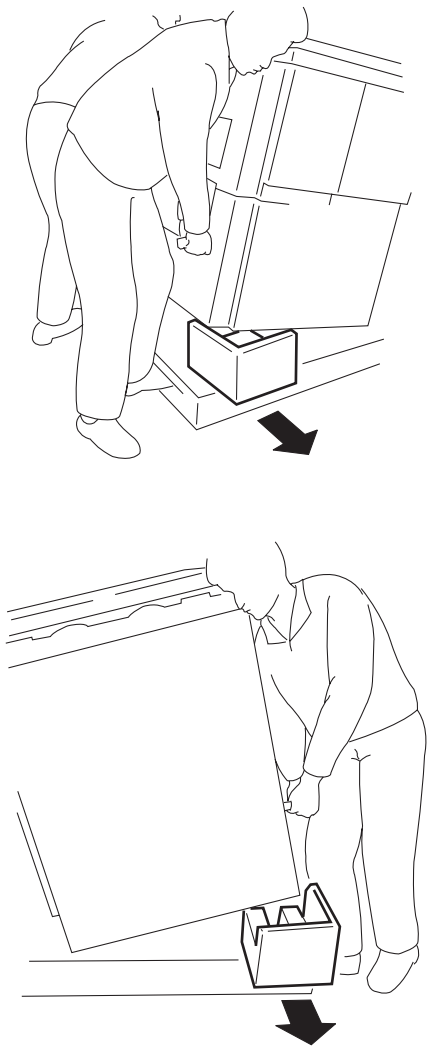

Figure 11-202

5) Lift the pickup side and the delivery side in turns to remove the plastic bag.
6) Working in a group of two, lift the pickup side (copier's right), and pull out the cardboard to slide out the slope plates.

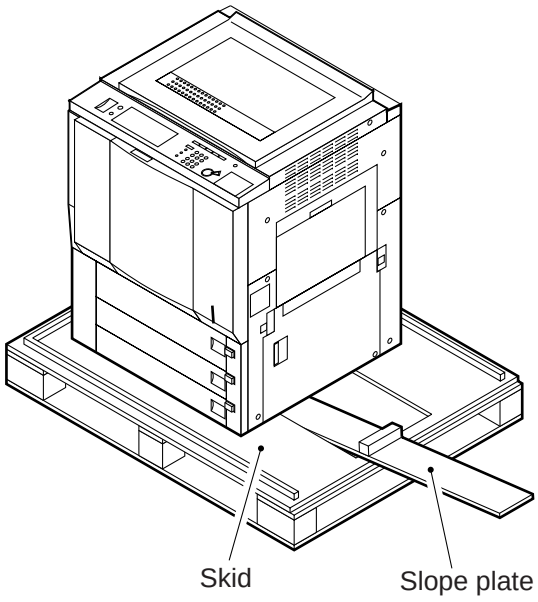

Figure 11-203

7) Detach the two pins taped to the skid, and arrange the slope plates, and secure them in place with the pins. Be sure that each slope plate is placed so that the boss at the center faces down.

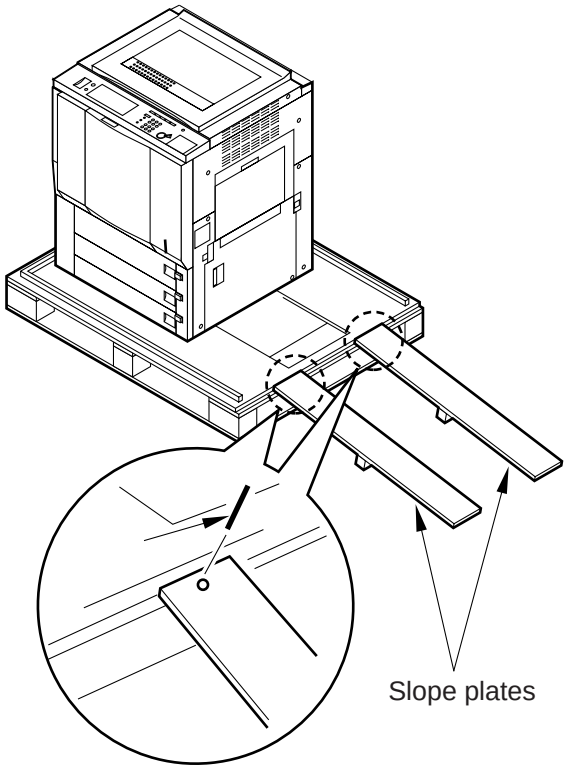

Figure 11-204

8) Slide down the copier from the skid. (Position one person to support from below while the other pushes from above.)
9) Open the cardboard box, and take out the parts and materials.
   Take out the M, C, Y, and Bk starter bottles, and shake them well. Peel off the seals, and keep them in a place free of dust. This is to make the starters used to the site of installation.

Caution:
Check to make sure that all attachments are available.

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B. Removing the Fixing Materials and Mounting the Waste Toner Collection Case

1) Remove the packaging tape, and remove the protective sheet of the copyboard glass.
2) Peel off the tape from the metal fixing of the scanner found on the outside of the left cover; then, slide the metal fixing from rear to the front and then to the left to detach.
   · You will use the metal fixing when relocating the copier; store it away to the right of the waste toner collection case.

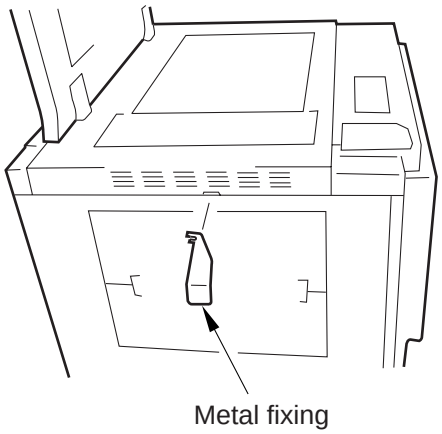

Figure 11-205

3) Slide the delivery protective member to the right; then, secure it in place to the copier's delivery assembly with a tapping screw.

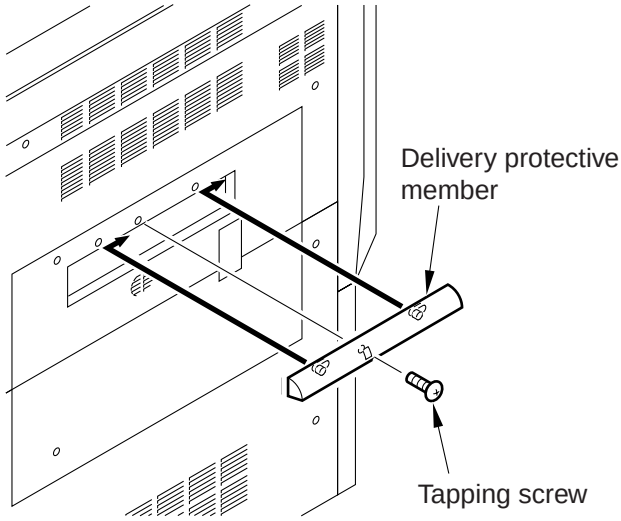

Figure 11-206

4) Open the right and left front covers, and remove the tape and fixing material from the lever and the like.
5) Release the lever, and slide out the transfer unit.
6) Peel off the fixing tape, and open the internal delivery unit.
7) Pull off the two fixing roller releasing rolls using radio pliers.
8) Close the inside delivery unit, and slide the transfer unit to the copier.

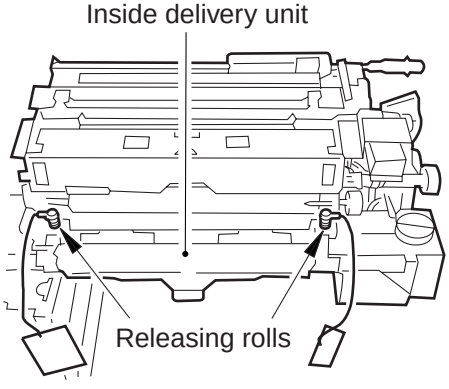

Figure 11-207

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9) Press the release button, and slide out all the cassettes and the duplexing tray (CLC1150); then, open the waste toner collection case cover.
Remove the two screws, and detach the handle found at the left front (bottom); then, fit it to the screw hole found to the right of the waste toner collection case using the removed screws. (You will be using the handle when relocating the copier.)

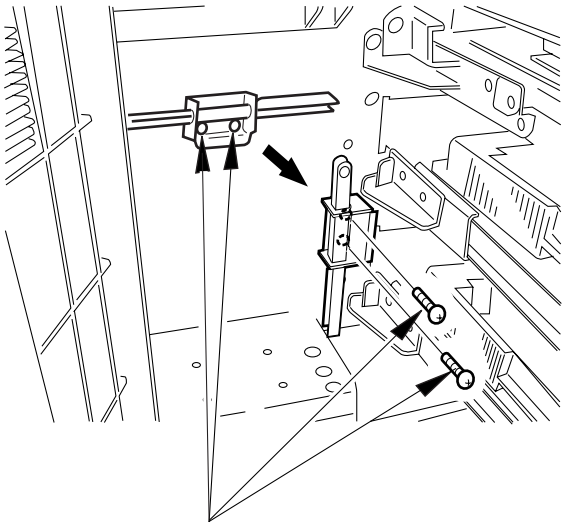

Figure 11-208

10) Set the waste toner collection case.
- Be sure that the plastic bag is dilated.

11) Remove the fixing member and the fixing tape from inside the cassette.

Caution:
Be sure to remove the packaging material before turning on the power switch.

12) Fit the size rolls that come with the copier from within the cassette so that the hole of the marking A (STMT-R) and the hole of the marking H (LTR-R) are out of view. (The rolls are used to prevent the use of inch-configured paper.)
- Be sure that the roll is in even contact.
- As many as three rolls are provided. Use one as a spare.

Caution:
The foregoing step is intended for a user not using inch-configured paper.

13) Close the waste toner collection case cover, and slide all cassettes and the duplexing tray (CLC1150 only) into the copier.

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C. Supplying Fixing Oil

1) Remove the transfer drum knob, and remove the two screws; then, detach the transfer unit cover, and remove the fixing material from within.

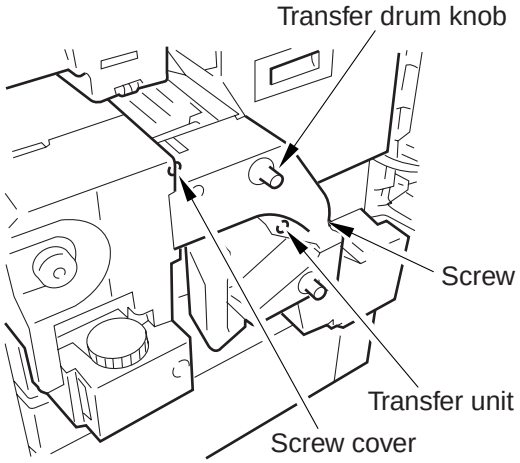

Figure 11-209

2) Remove the screw, and detach the stopper of the transfer drum.

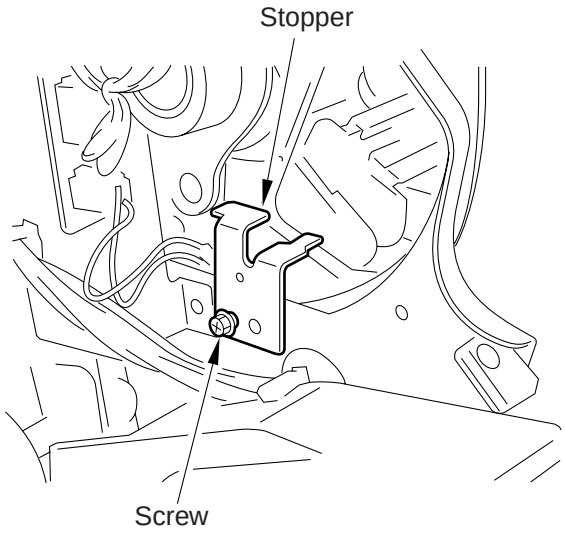

Figure 11-210

3) Remove the cap from the fixing oil tank.
4) Remove the outside cap and the inside cap of the fixing oil bottle, and replace them with the funnel that comes with the oil bottle.

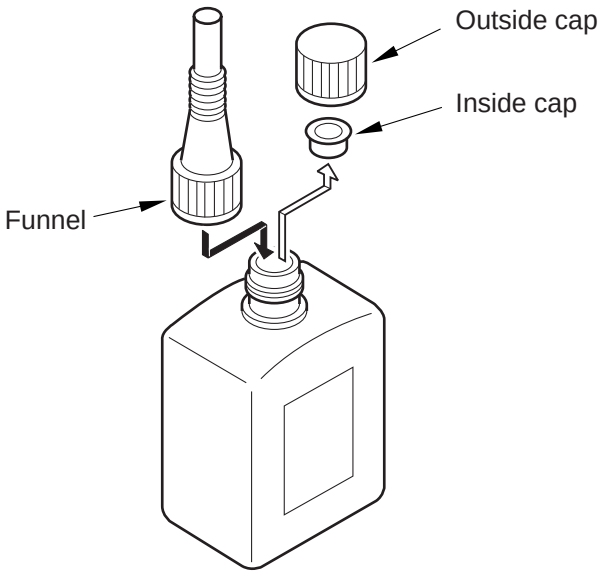

Figure 11-211

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5) Pour all fixing oil into the tank.
6) Fit the caps of the fixing oil tank.

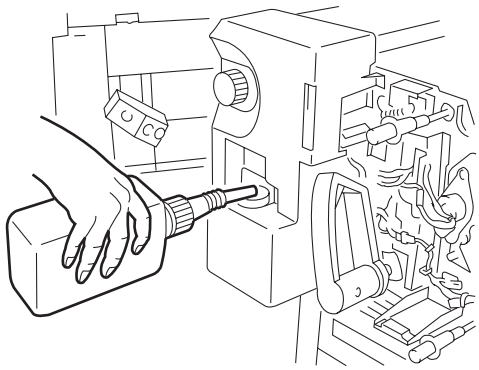

Figure 11-212

7) Turn the gear assembly of the transfer drum counterclockwise with your fingers so that it is as shown.
Shift the levers of the attraction brush and the transfer blade to the left to lock the brush and the blade in position.

Caution:
You will hear clicks when you rotate the lever counterclockwise. It is a normal condition, provided to prevent reverse rotation during operation.

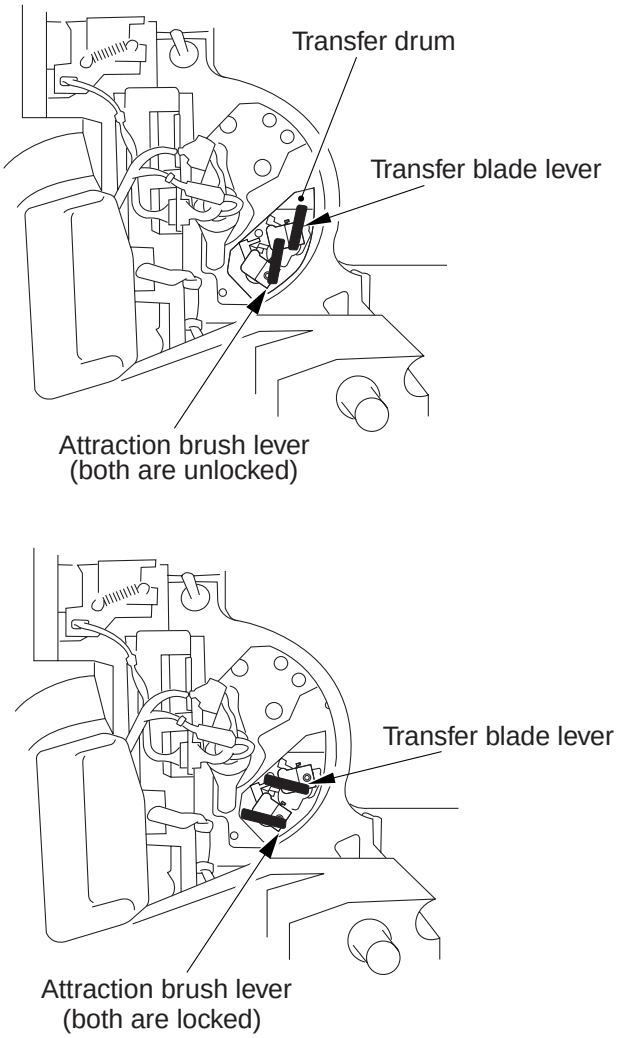

Figure 11-213

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D. Mounting the Drum Cleaner and Setting the Environment Switch

1) Remove the two screws, and remove the two slide stoppers of the hopper (toner box) unit.
2) While pushing down the hopper stopper, slide out the hopper unit, and turn it toward the front.

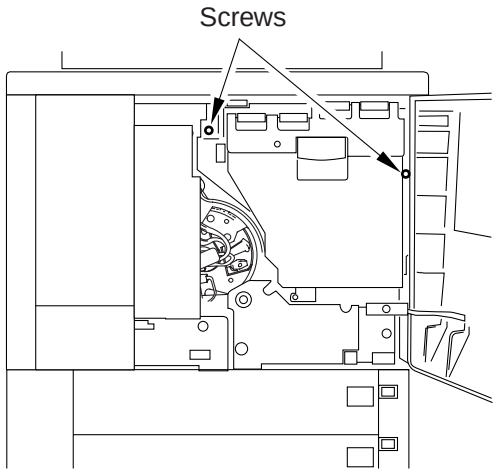

Figure 11-214

3) Disconnect the connector (yellow harness) on the right side, and free its harness from the edge saddle; then, remove the screw, and pull the black toner concentration sensor straight out.

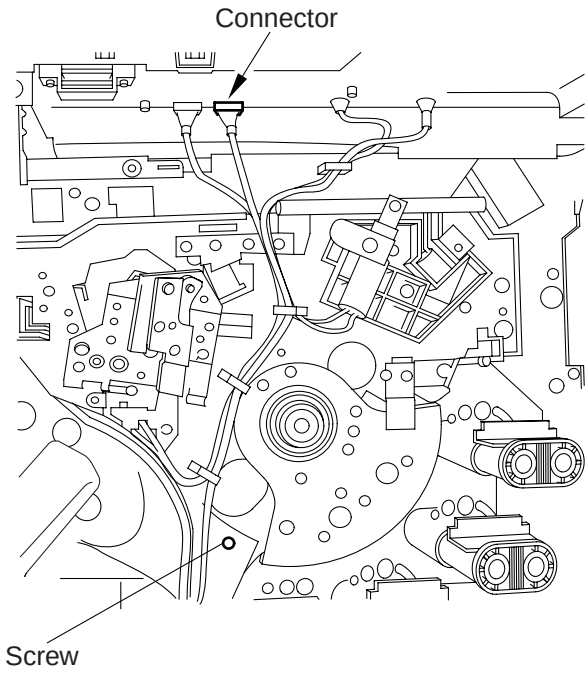

Figure 11-215

4) Apply drum cleaner lubricant evenly along the No. 2 blade (front, rear).
   - Be sure to shake the drum cleaner lubricant container well before application.
   - Be sure to apply the lubricant to the face, back, as well the edge.
   - Be sure to apply the lubricant as if to tap lightly on the edge. Do not rub it so as to avoid chipping the edge.
5) Dry wipe the sensor face of the black toner concentration sensor.
   - Do not use alcohol.

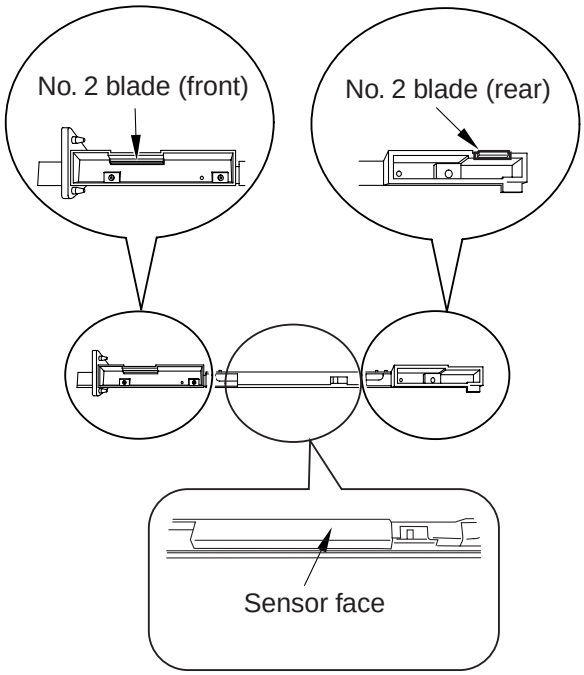

Figure 11-216

6) Mount the black toner concentration sensor unit, and connect the connector with a screw.
   - During insertion, take care not to make contact with the photosensitive drum.

Caution:
If the No. 2 blade comes into contact with the photosensitive drum during insertion, lubricant can spread to the photosensitive drum, causing white spots in copy images.

7) Remove the screw, and pull the photosensitive drum cleaner to the front; then, shift it counterclockwise, and then slide it out.

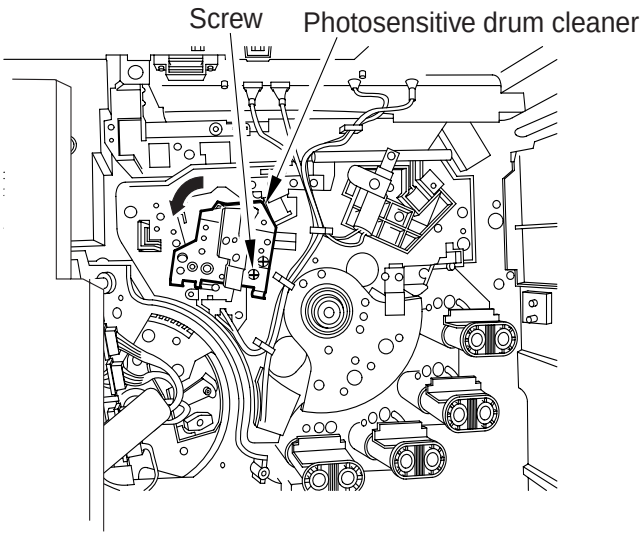

Figure 11-217

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8) Wrap lint-free paper around your finger, and apply drum cleaner lubricant evenly along the blade of the photosensitive drum cleaner.
   - Be sure to apply evenly. Otherwise, vertical white lines may appear on copy images.
   - Be sure to apply on all surfaces in addition to the edge except the bottom surfaces.
   - Do not apply as if to rub it so as to avoid chipping the edge. Use light, tapping strokes.
   - When applying to the edge, move from above to the edge surface as if to collect the lubricant where the drum comes into contact.

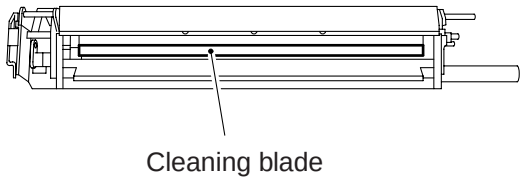

Figure 11-218

9) Mount the photosensitive drum cleaner with a screw.
   - Take care not to make contact with the photosensitive drum unit.

10) While holding the cleaner blade releasing lever in place by hand, loosen the screw so that the cleaning blade releasing lever is in locked position; then, screw it in place. (When the lever is on the right, the blade is locked in position.)

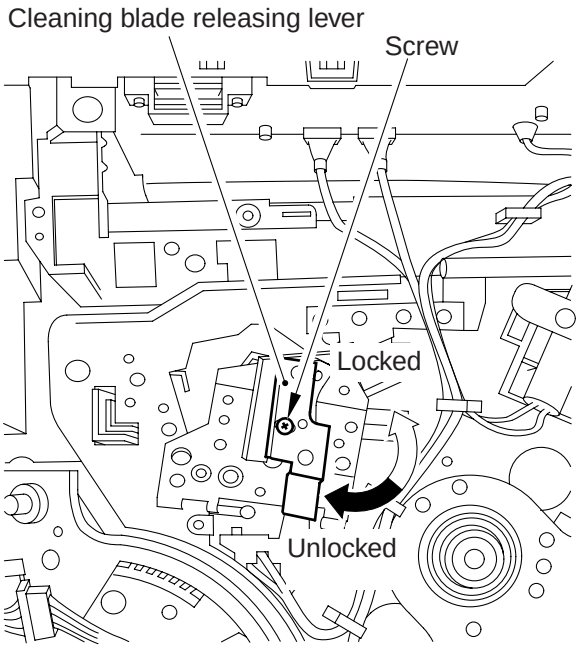

Figure 11-219

Caution:
Be sure to fix the screw in place to avoid possible damage to the cleaner assembly.

11) Mount the cover and the knob; then, set the transfer unit inside the copier.
12) Remove the four screws, and mount the left lower cover.

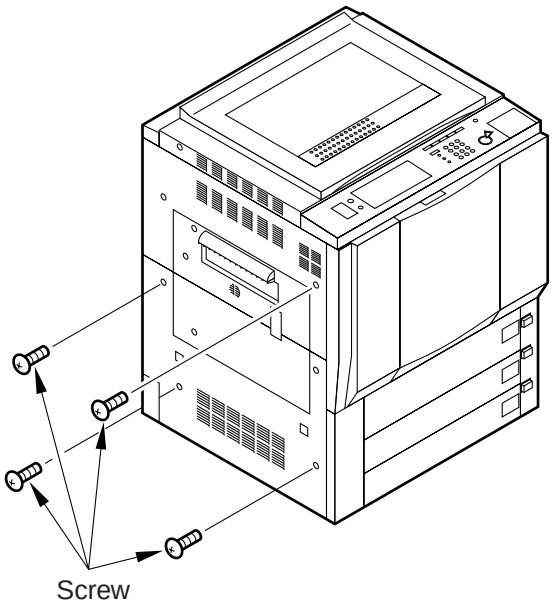

Figure 11-220

13) Shift the environment switch (upper, black) to the ON position.
    - It is set to OFF at time of shipment from the factory.
    - Keep the cassette heater switch (lower, gray) at OFF.

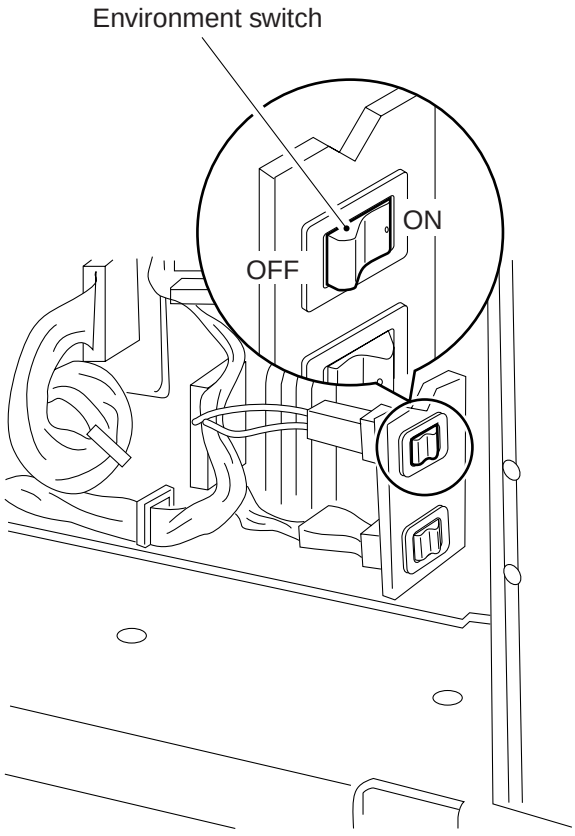

Figure 11-221

14) Mount the left lower cover with four screws.

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E. Supplying Toner

1) Close the left front cover, and insert the door switch actuator into the right door switch.

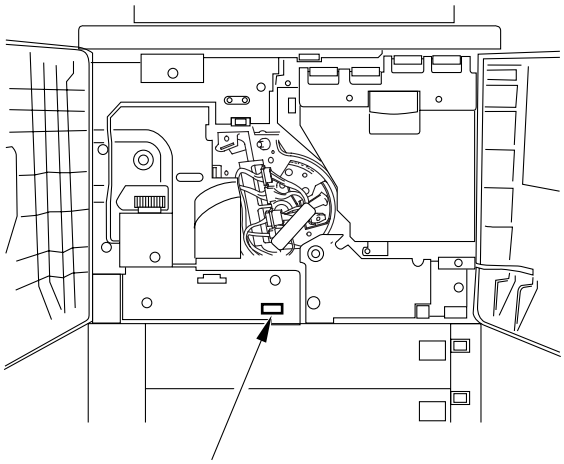

Figure 11-222

2) Insert the control key.
3) Connect the power plug, and turn on the power switch.

Caution:
Make sure that the power is as rated (±10%).

4) Place copy paper on the floor under the hopper (open), and fit the hopper stoppers into the four supply mouths found in the bottom of the hopper.

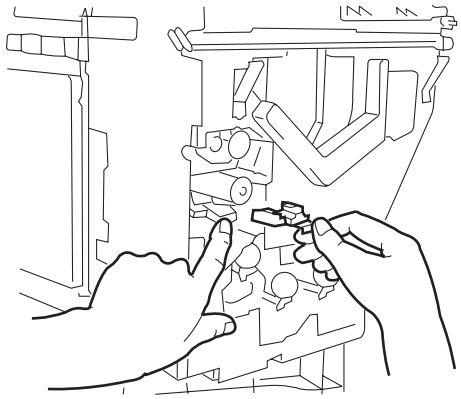

Figure 11-223

5) Shake the Bk toner bottle up and down as shown 20 times or more.

Caution:
Do not shake the bottle until immediately before setting it to the hopper. Check to make sure that the toner has not caked.

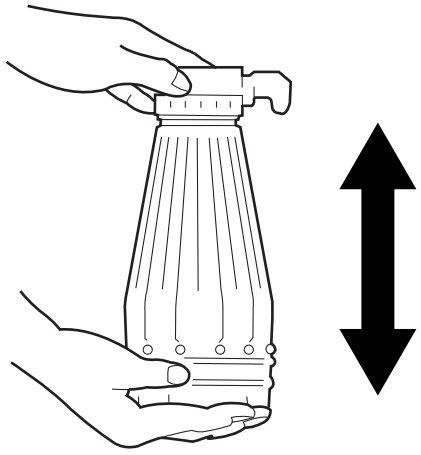

Figure 11-224

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6) Remove the cap of the Bk toner hopper, and fit the Bk toner bottle into the mouth of the hopper; then, holding the base of the bottle, turn it clockwise about 10º.

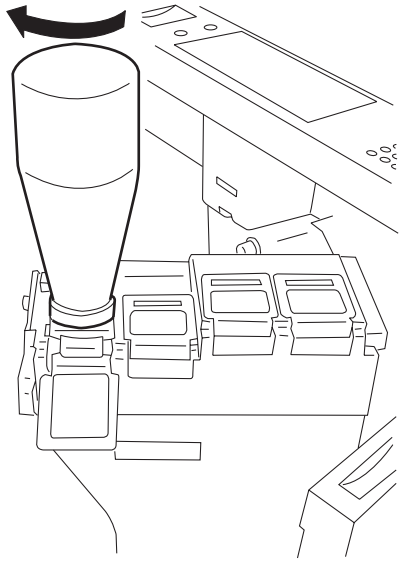

Figure 11-225

7) Open the slide shutter of the Bk toner bottle, and tap lightly on the bottom and the side of the bottle two to three times.
Check to make sure that all toner has fallen into the hopper.

Figure 11-226

8) Close the slide shutter of the Bk toner bottle, and turn the bottle counterclockwise about 10° to detach.
Check to make sure that no toner remains on the mesh of the hopper mouth; otherwise, tap on the mesh so that the toner falls inside the hopper.

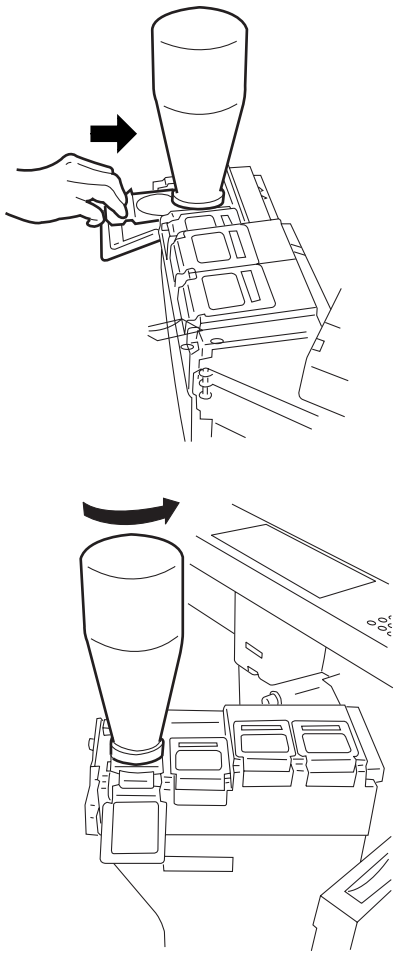

Figure 11-227

9) Supply, C, and Y toners in the same way.
10) Press the following keys on the control panel in sequence to start service mode:
   - ✳
   - 2, 8 (Press these two keys at the same time.)
   - ✳

11) Press 'COPIER'.

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12) Press ‘FUNCTION’.

13) Press ‘INSTALL’.

14) Press ‘HP-STR-4’.

Caution:
Be sure to wait until the indication on the control panel is ‘READY’ before executing HP-STR-4 in service mode.

15) Press ‘OK’.

16) Wait until the toner (4 colors) inside the hopper has been stirred fully (about 2 min).

F. Supplying the Starter Developer

1) Press ‘SPLY-K’.

Caution:
Be sure to wait until the indication on the control panel is ‘READY’ before executing SPLY-K in service mode.

2) Press ‘OK’.

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3) See that the developing assembly is locked in position and the screw inside it starts to rotate (about 10 sec).

Caution:
Be sure to wait until the selected developing assembly is locked in position.

4) Fit the starter developer supply funnel that comes with the copier* in the supply mouth of the developing assembly, and hold it in place.
   * Do not use the supply funnel, whose mouth is too small.
   · Be sure to try one color at one time.

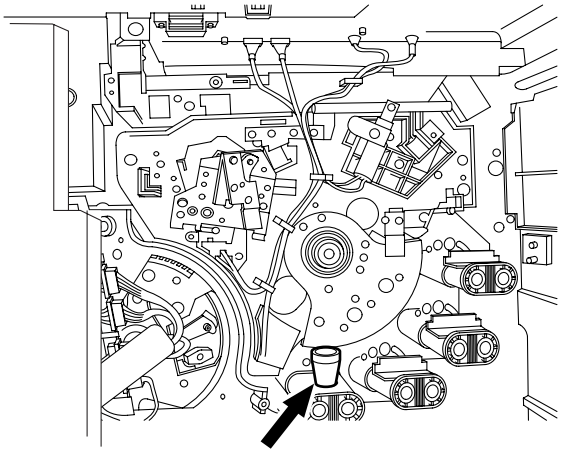

Figure 11-228

5) Pour the starter developer into the developing assembly.
   · Try tilting the starter developer bottle gradually to avoid spilling.

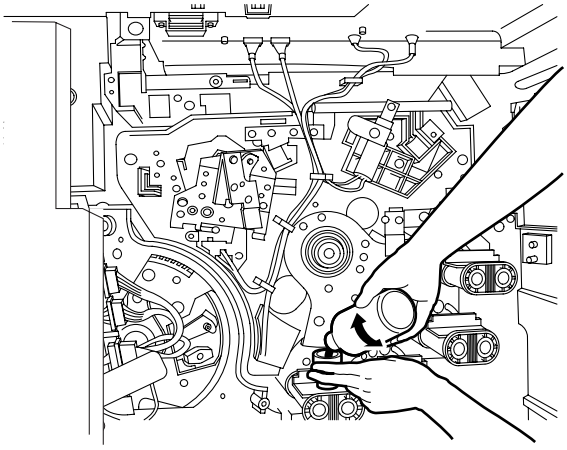

Figure 11-229

6) When done, press the Stop key to stop the operation.
   · The copier will indicate 'READY'.

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7) Supply M, C, and Y starter developers by repeating steps 1) through 6). (Press SPLY-M, SPLY-C, or SPLY-Y accordingly.)

8) Turn the hopper unit slowly, and push down the hopper stopper so that the roll on the left of the hopper is on the rail.
Here, do NOT push in the hopper unit to lock it in position as yet.

Caution:
Do no handle the hopper unit roughly. Otherwise, large amounts of toner will drop from the hopper assembly.

9) Press 'STIR-4'.

Caution:
Be sure to wait until the copier indicates 'READY' on its control panel before executing STIR-4 in service mode.

10) Press 'OI', and wait until stirring ends (about 10 min).

11) Press 'INIT-4'.

Caution:
Wait until the copier indicates 'READY' on its control panel before executing 'INIT-4' in service mode.

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12) Press ‘OK’.

13) Change the cassette size to suit the user’s needs while ATR is taking place (about 10 min).
See H. “Changing the Cassette Paper Size.”

14) Detach the hopper cap, by pulling it slowly in horizontal direction.

Caution:
If you pull on the hopper cap at an angle, the seal of the hopper cap will become damaged, resulting chips falling into the developing assembly. Take adequate care.

15) Press ‘ADJUST’.

16) Press ‘DENS’.

17) Record the data shown on the DENS screen on the service label.
- The service label is attached behind the Service data sheet cover inside the right front cover. Be sure to mount the cover after recording the data.

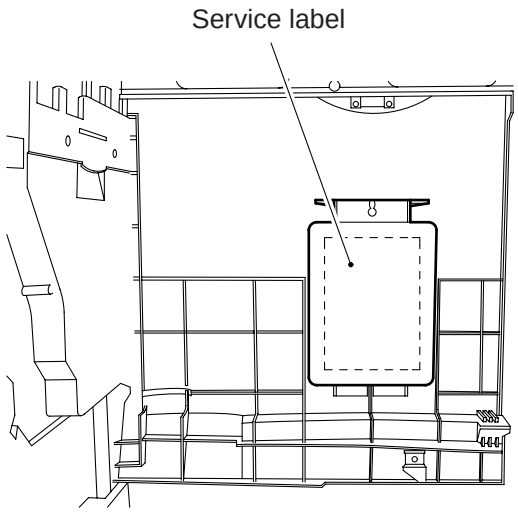

Figure 11-230

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18) Press the Reset key twice, and remove the door switch actuator.
19) Mount the two slide stoppers of the hoppe unit.
20) Close the left and right front covers.

G. Checking the Images and Operations

1) Slide out the cassette.

2) Put copy paper in the cassette.

3) Attach the Free Paper Size label to the universal type cassette.

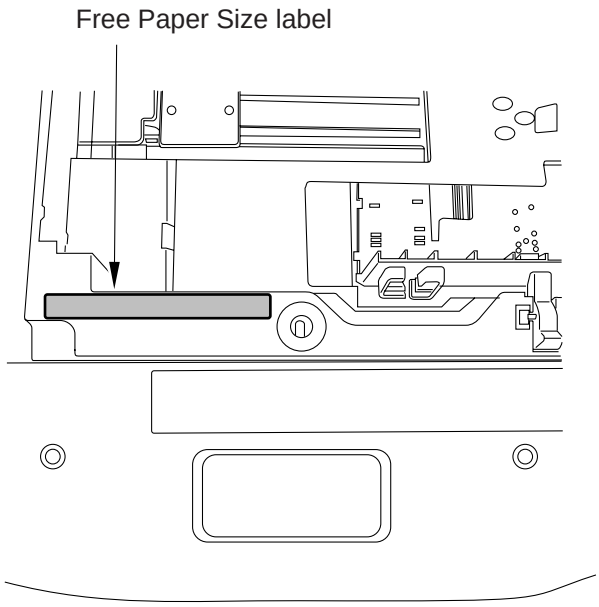

Figure 11-231

4) Remove the cassette size plate, and attach the side label indicating the appropriate paper size.

5) Put the size plate back where it was found.

6) Slide the cassette into the copier.

7) Press the ✳ key.

8) Press 'adjust/clean'.

9) Press the ▸ key (auto gradation correction), and perform the instructions on the control panel to execute auto gradation correction.

Caution:

Before generating test prints, be sure that paper of B4 or larger is set.

10) Set a test sheet on the copyboard, and check the images produced by trying all cassettes as the source of paper. (In the case of the CLC1150, try the duplexing tray also.)

Caution:

- Make sure no abnormal noise is heard.
- Check the copy images made at each default reproduction ratio.
- Check to be sure that as many copies as set are made normally.
- If the copy images are not normal, make adjustments by performing the Image Adjustment Basic Procedure.

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11) Make copies using the multifeeder.

12) Check the external covers for scratches and deformation.

Caution:
Check to make sure that copying operation is normal.

13) Clean up the area around the copier.

14) Move the copier to its site of installation, and secure it in place using the adjuster.

Caution:
Check to make sure that the copier is more or less level.

15) Fill out the service sheet.

H. Changing the Cassette Paper Size

1) Slide out the cassette.

2) Pick the two hooks used to change the paper size, and lift the cover of the side guide plate to remove. (You need not perform this step in the case of the universal cassette.)

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6) Slide the cassette into the copier.

7) Start service mode, and enter the new paper size by selecting COPIER>OPTION>CST>P-SZ-C1 or P-SZ-C2. (You need not perform this step in the case of the universal cassette.)

8) Turn off and then on the power switch.

Caution:
Be sure to end INIT-4 before performing this step.
After completing the foregoing work, install the various accessories as necessary.

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3) Holding the grip of the side guide plate, move the side guide plate up to the appropriate side index.

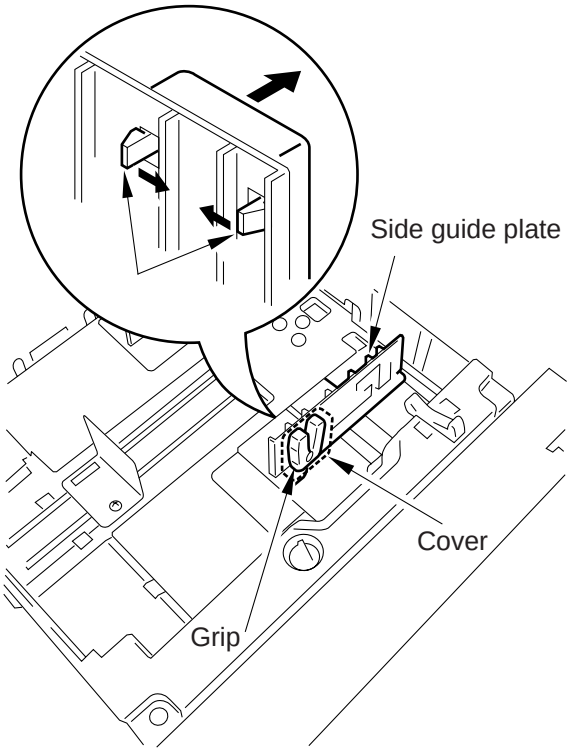

Figure 11-232

4) Mount the cover of the side guide plate. (You need not perform this step in the case of the universal cassette.)

5) Remove the screw of the rear guide plate, and relocate the rear guide plate to the appropriate size index. (In the case of the universal cassette, slide the rear end guide plate to the appropriate size index.)
If the paper is A3 or 11x17, orient and mount the rear guide plate as shown. (In

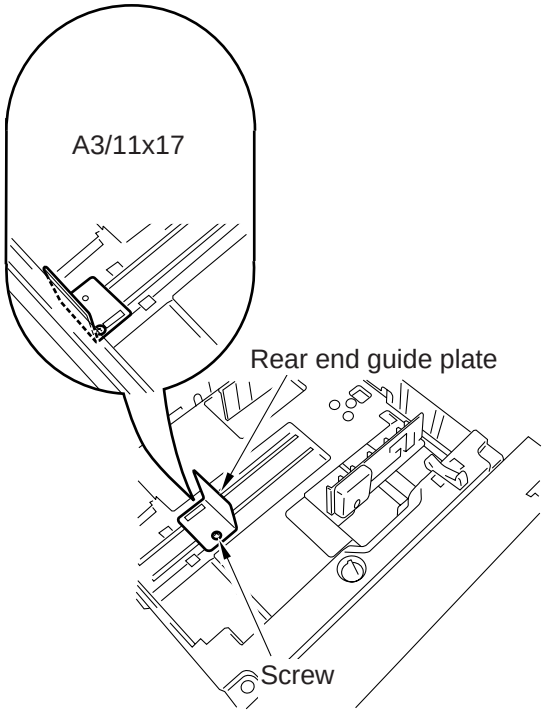

Figure 11-233

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III. RELOCATING THE COPIER

If you must relocate the copier by truck or other means of transportation after installation, perform the following work:

1) Remove the sorter, film projector, document holder, and paper deck from the copier, and pack them separately.
2) Fit the scanner metal fixing.
   Put the metal fixing [1] against the hole in the delivery assembly, and slide it from the front to the rear to secure the scanner mirror base in place.
   Tape the metal fixing to the left upper cover.

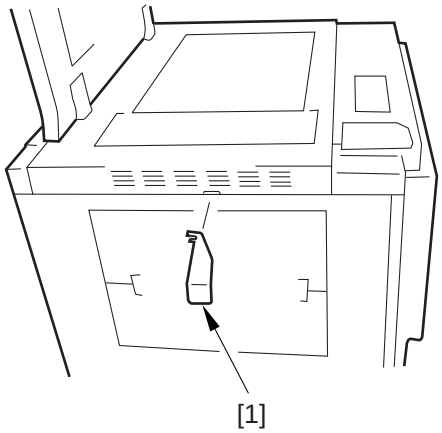

Figure 11-301

3) Tape the cap of the toner hopper in place. If the hopper contains toner, remove the hopper unit, and transport it separately.
4) Slide out the transfer drum frame.
5) Remove the fixing assembly. (Place a newspaper or the like on the floor to avoid staining with fixing oil.)

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6) Remove the two screws [2] (for the metal fixing on the bottom of the oil tank).
7) Remove the screw [3], and detach the oil tank fixing plate [4].
8) Pick the hook with your fingers, and detach the oil level sensor [5].
9) Remove the hose [6]. (At this time, oil will drop. Be sure to use a paper rag or the like.)
10) Lift the fixing unit, and remove the oil tank.
11) Empty the oil tank of silicone oil.
12) Put back the parts by performing steps 5) through 11) in reverse.
13) Loosen the screw [7], and unlock the cleaning blade releasing lever [8] slowly; while holding it in place, tighten the screw.

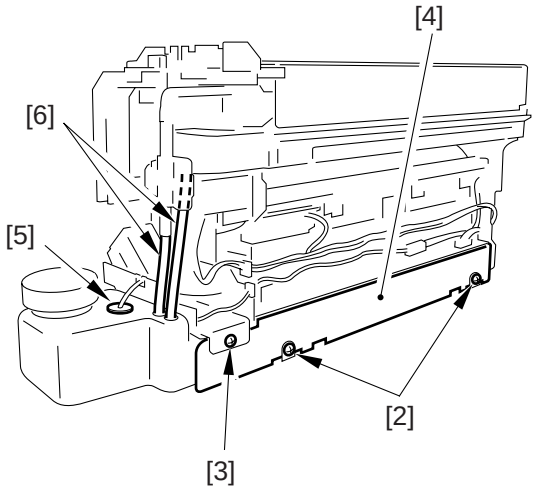

Figure 11-302

14) Tape the releasing lever of the transfer drum in place.
15) Tape the front cover, delivery assembly, and pickup assembly in place.
16) Place A3 copy paper on the copyboard glass, and tape the copyboard cover (or the RDF) in place.
17) Turn the adjuster so that it will not interfere with transpiration.

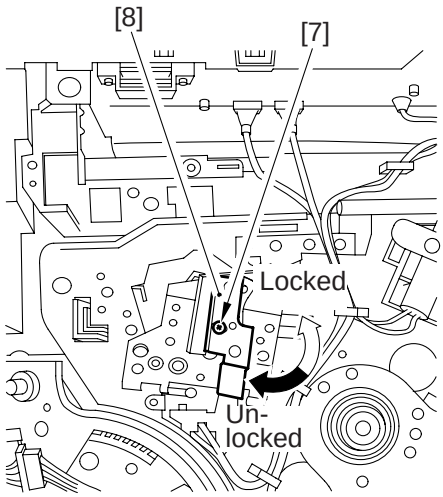

Figure 11-303

IV. MOUNTING THE DOCUMENT HOLDER

1) Peel the face stickers [1] found on the right or the left of the copier, and fit the stepped screws [2].
2) Fit the document holder [4] on the stepped screws, and secure it in place with screws [3].

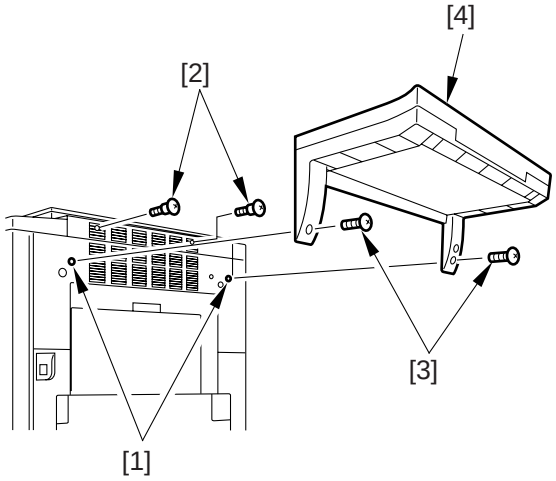

Figure 11-401 Copier Right

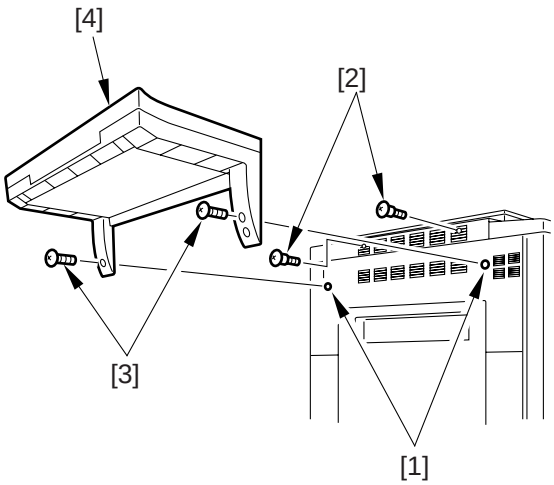

Figure 11-402 Copier Left

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V. INSTALLING THE CONTROL CARD UNIT-V

1. Mounting the Control Card Unit

1) Open the copier's front cover, and remove the four screws [1] used to secure the control panel in place.
2) Disconnect the two connectors (J901, J961), and detach the control panel [2].

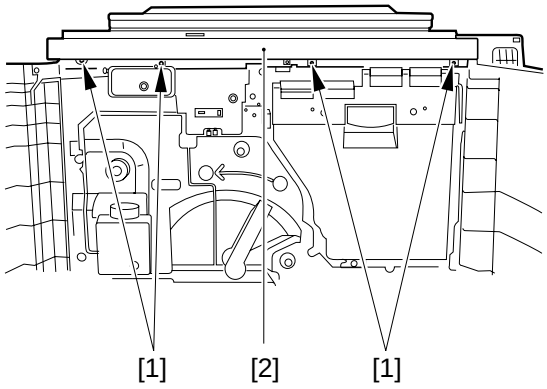

Figure 11-501

3) Remove the mounting screw [3] of the face cover.
4) Disengage the claws [4], and detach the face plate [5] from the card slot.
5) Attach the insulating sheet [6] over the display opening for the control card unit in the control panel.

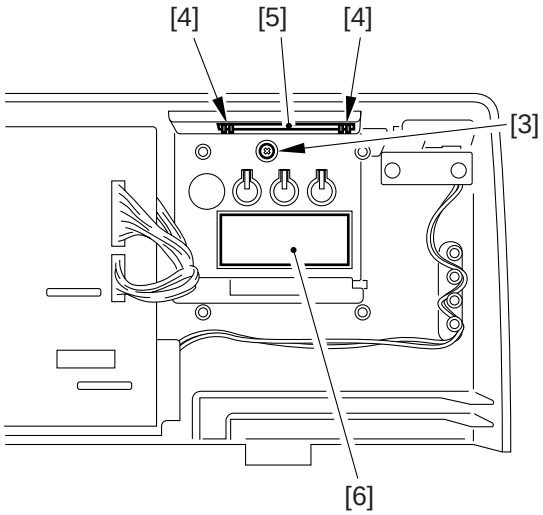

Figure 11-502

6) Peel off the protective sheet from the control card unit.
7) Secure the control card unit to the control panel with four self-tapping screws [7].
   At this time, insert a card into the control card unit, and secure the control card unit where the card may be slid in and out easily.
   Further, check to make sure that the connector for the printer is centered in the opening.

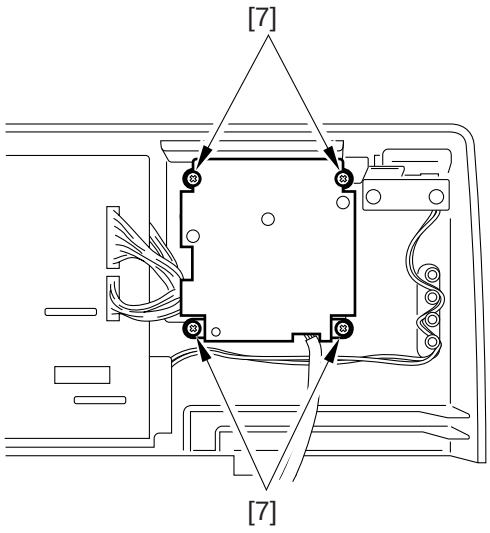

Figure 11-503

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8) Remove the shorting connector [8], and connect the connector [9] (4-pin) of the control card unit.
(The connector on the copier side is found under the control panel.)

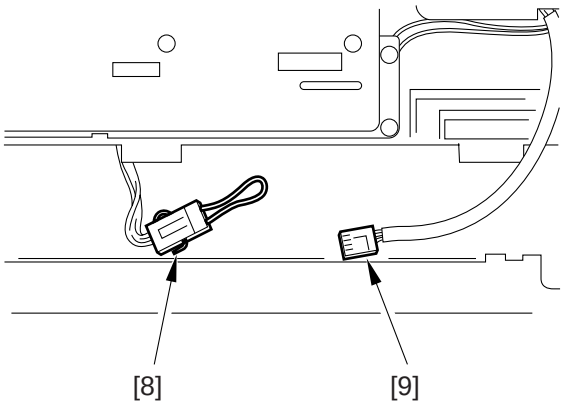

Figure 11-504

9) Secure the grounding wire [10] of the control card to the opening under the copier's control panel. (The opening is found to the left of the connector of the primary charging assembly.)

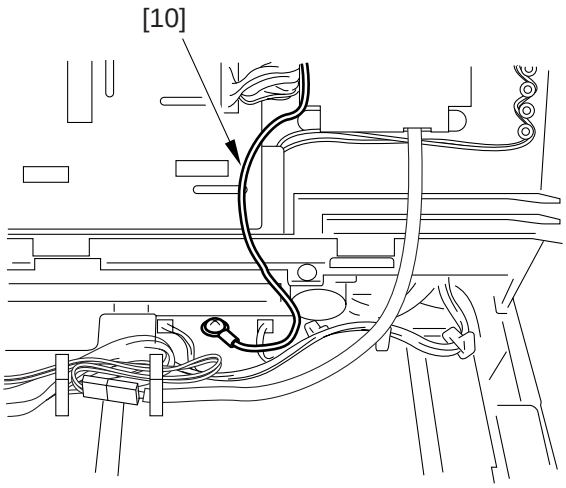

Figure 11-505

10) Peel off the protective sheet from the nameplate of the control card unit.
11) Attach the nameplate [11] of the control card unit to the copier's control panel.

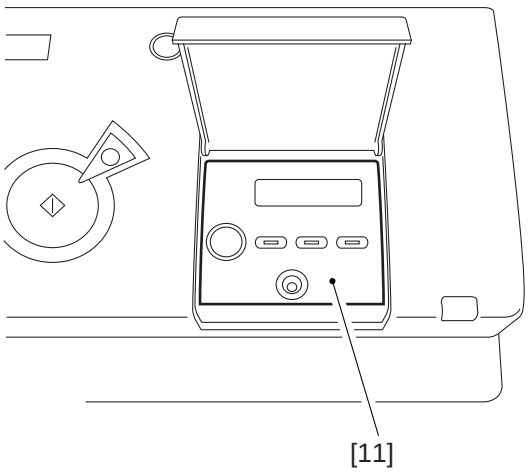

Figure 11-506

12) Mount the control panel to the copier.
13) Turn on the copier's power switch, and check the operation of the control card unit.

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VI. INSTALLING THE COPY DATA CONTROLLER-A1

Note:
The Copy Data Controller-A1 is not available in certain sales areas.

1. Setting the Board

1) Remove the two screws [2], and detach the top cover [1].

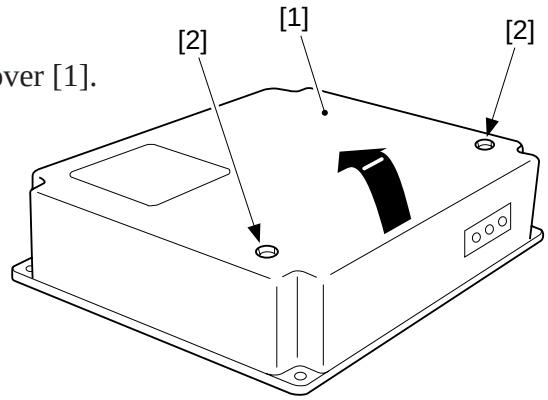

Figure 11-601

	Bit	Position	Description	Remarks
SW1	1~3	OFF	Use it for normal operation.	
	4	ON	Use it for IPC communication.	CLC1120/1130/1150
		OFF	Use for serial communication.	
	5	ON	Use it if a central control device is used.	Requires the Interface Board-B1.
		OFF	Use it for remote control in normal operation or with a commercially available modem.	If a commercially available modem is used, requires the Interface Board-B1.
	6	ON	Use it for RAM initialization.	
		OFF	Use it for normal operation.	
SW5	1	ON	Use it for factory adjustment.	
		OFF	Use it for normal operation.	
	2	ON	Use it for control of inch-configured papers (11x17, LTR, LGL, STMT).	If a paper other than the left must be selected, use service mode. (See 10) of 3. "Checking the Operations.")
		OFF	Use it for control of AB-configured papers (A3, A4, B4, B5).	
	3	ON	Use it for service mode.	
		OFF	Use it for normal operation.	
	4	ON	Use it for group control.	
		OFF	Use it if group control is not selected.	
	5,6	OFF	Not used.	

*1: If the Control Card Unit-V or remote control by the Copy Data Controller-A1 only is used, set bit 4 of the DIP switch (SW5-4) to OFF; i.e., if group control functions are not used except ID input, control by paper size, control by toner color, control by copy mode, and control by paper type.

Table 11-601

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2) Set the DIP switches (SW1, SW5) on the copy data controller to suit the needs of the user.
   a. Set the DIP switch SW1-4 to suit the type of copier.
   b. If group control is planned, set the DIP switch (SW5-2): i.e., to control AB-configured papers (A3, A4, B4, B5), keep the bit at OFF; to control inch-configured papers (1x17, LTR, LGL, STMT), keep the bit at ON.
   c. If no group control is planned, keep bit 4 of the DIP switch (SW5-4) at OFF.
   If you are connecting the Interface Board-B1, Communication Control Board-A1, or Interface Board-A1, see the instructions under "Setting the Board" of each respective Installation Procedure.

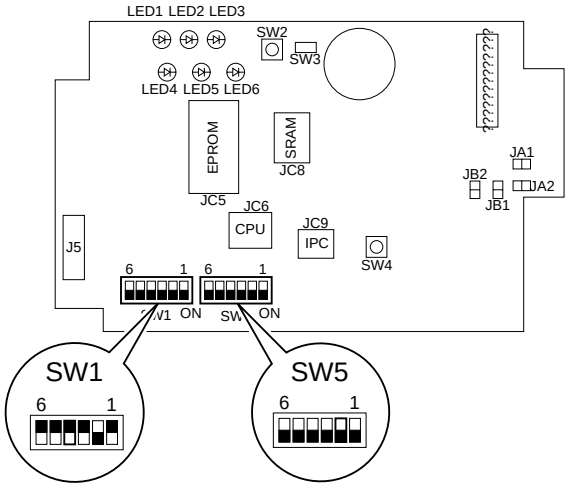

Figure 11-602

3) Set the jumper connectors (JA1, JA2, JB1, JB2) on the copy data controller to suit the user's needs.

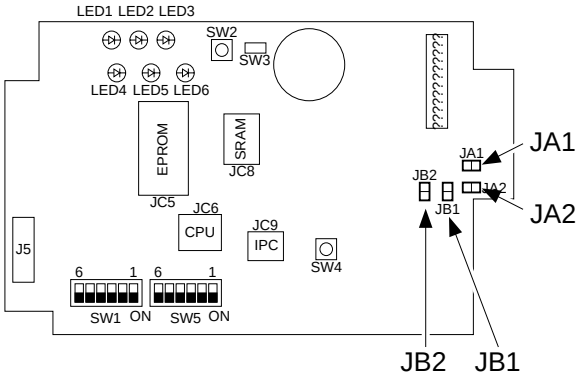

Figure 11-603

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A: If the Communication Control Board-A1 or the Interface Board-B1 is to be connected (requires the Power Supply-A1),

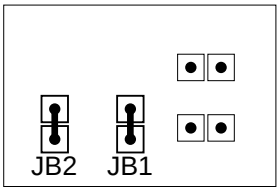

Figure 11-604

B: If the Communication Control Board-A1 or the Interface Board-B1 is not to be connected (does not require the Power Supply-A1),

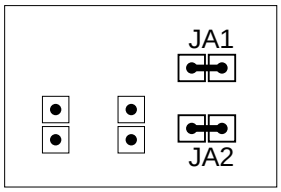

Figure 11-605

2. Installing to the Copier

When installing the copy data controller to the copier, keep the following in mind:

1. Be sure to comply with the laws and regulations of the country.
2. Be sure that the copier has been properly installed.
3. Be sure that the copier's power plug is disconnected.
4. Be sure to identify the screws by type (length, diameter) and location.
5. Be sure to prepare settings data on the computer at the service station (if remote control is planned).

1) Remove the four screws [2], and detach the face plate [1] of the copier's rear cover.

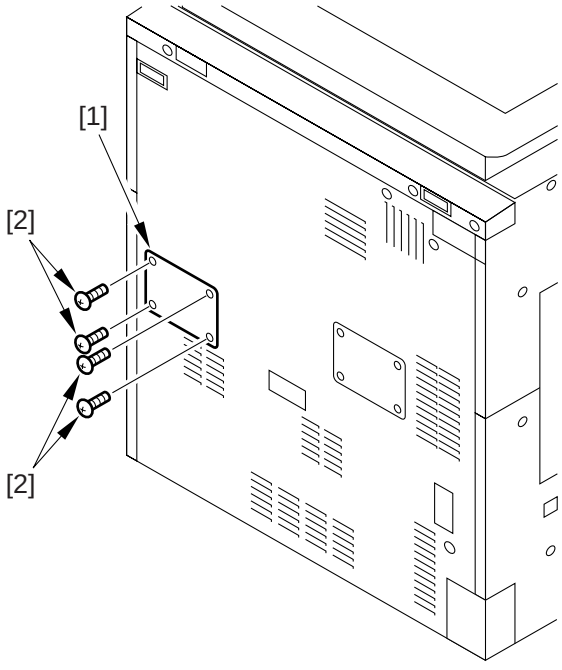

Figure 11-606

2) Connect the 8-pin connector [3] of the unit with the copier's 8-pin connector [4].

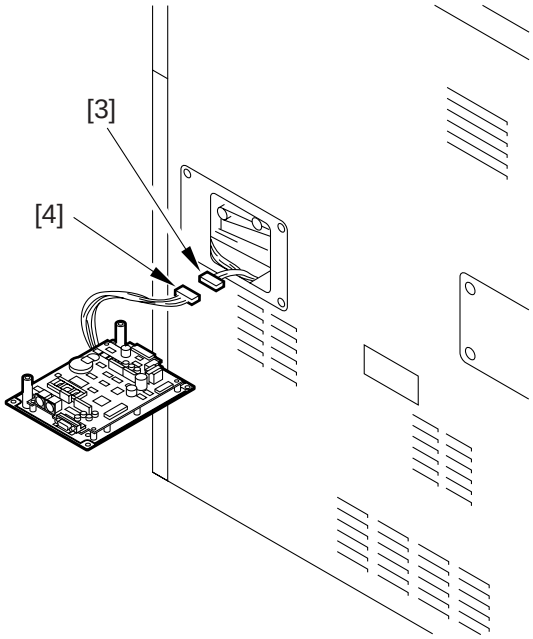

Figure 11-607

3) If you are installing the Card Reader-A1, connect the 9-pin relay cable or the card reader connected to the connector J4 of the unit with the copier's 9-pin connector.

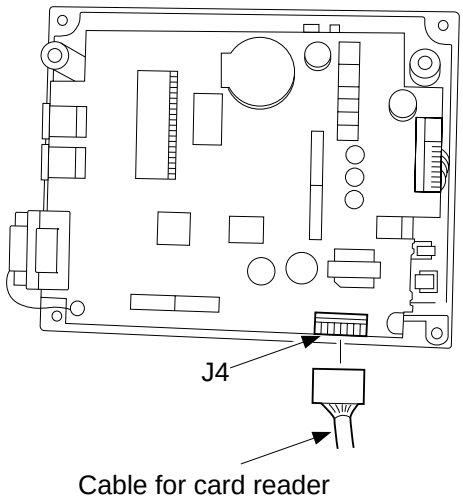

Figure 11-608

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4) Secure the unit [5] where the face plate of the copier's rear cover is found with four screws [6].

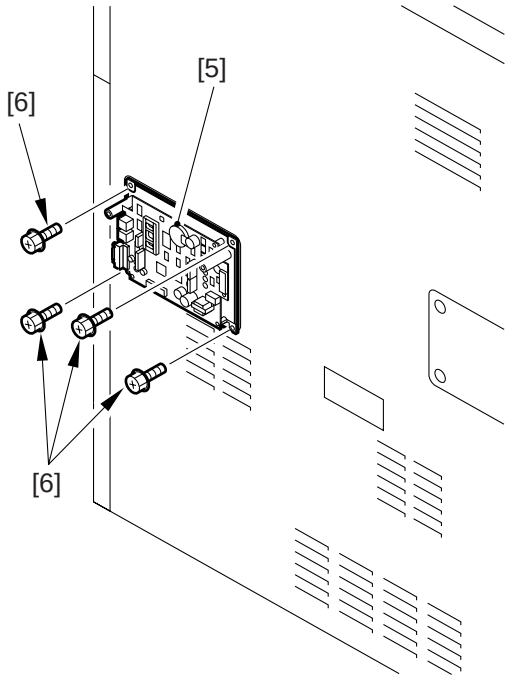

Figure 11-609

3. Checking Operations

1) If you are not connecting the Communication Control Board-A1 or the Interface Board-B1 (does not require the Power Supply-A1), go to step 4).
Connect the connector [1] of the Power Supply-A1 with the connector [2] of the copy data controller securely as shown.
Be sure that the cord is in the groove of the board.

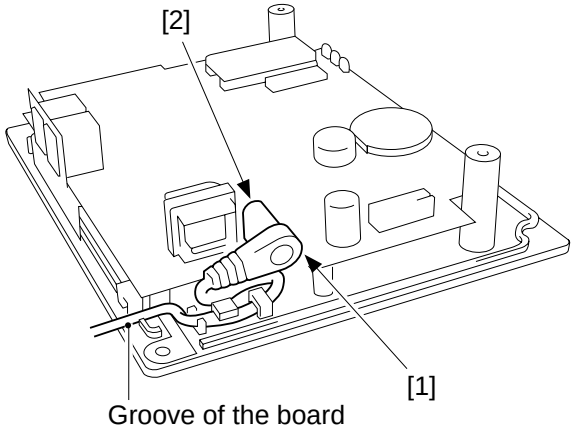

Figure 11-610

2) Connect the Power Supply-A1 to the power plug, and check to make sure that LED1 of the copy data controller turns on.

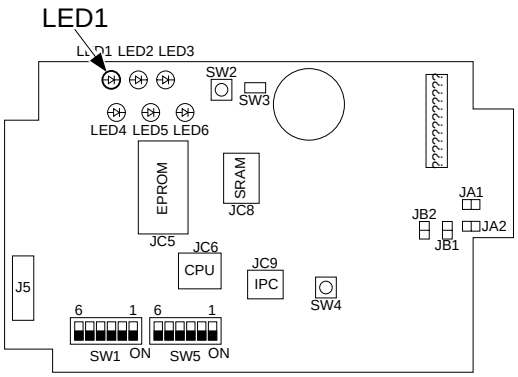

Figure 11-611

3) Turn on the copier's main switch, and check to make sure that LED 2 of the copy data controller flashes.
Make one copy, and check to make sure that LED3 flashes during copying operation.

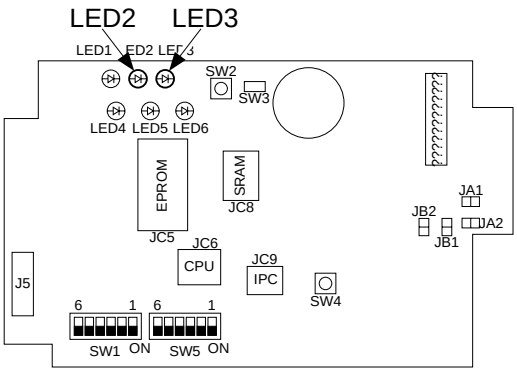

Figure 11-612

4) If you are connecting the Communication Control Board-A1 or the Interface Board-B1 (requires the Power Supply-A1), go to step 5).
Turn on the copier's main switch, and check to make sure that LED1 of the copy data controller turns on and LED2 flashes.
Make one copy, and check to make sure that LED3 flashes during copying operation.

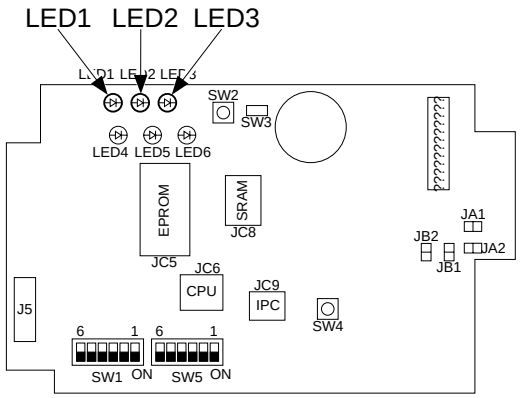

Figure 11-613

5) If group control is not planned, go to step 11).
If group control is panned, set the input method, control method, and paper size to suit the use's needs.
Shift bit 3 of the DIP switch (SW5-3) on the copy data controller to ON.

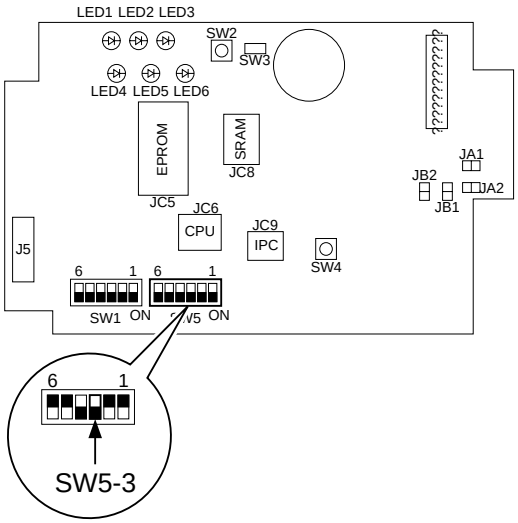

Figure 11-614

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3) Turn on the copier's main switch, and check to make sure that LED 2 of the copy data controller flashes.
Make one copy, and check to make sure that LED3 flashes during copying operation.

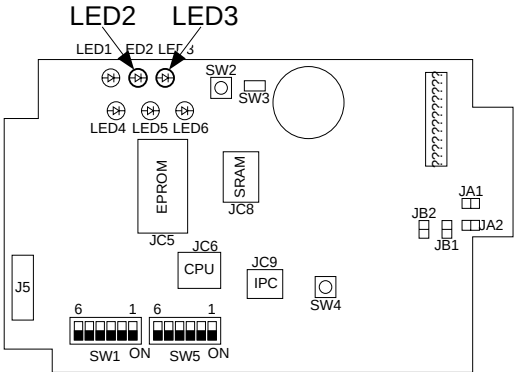

Figure 11-612

4) If you are connecting the Communication Control Board-A1 or the Interface Board-B1 (requires the Power Supply-A1), go to step 5).
Turn on the copier's main switch, and check to make sure that LED1 of the copy data controller turns on and LED2 flashes.
Make one copy, and check to make sure that LED3 flashes during copying operation.

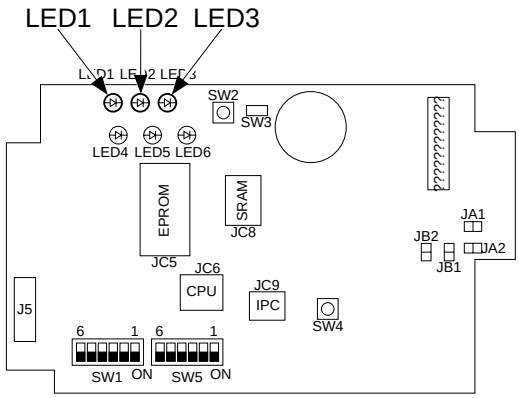

Figure 11-613

5) If group control is not planned, go to step 11).
If group control is panned, set the input method, control method, and paper size to suit the use's needs.
Shift bit 3 of the DIP switch (SW5-3) on the copy data controller to ON.

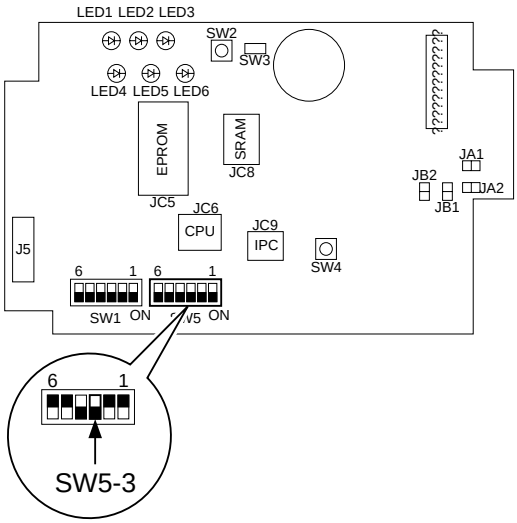

Figure 11-614

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6) Connect the connector [3] of the Numeric Keypad-A1 to the connector J3 [4] of the copy data controller.

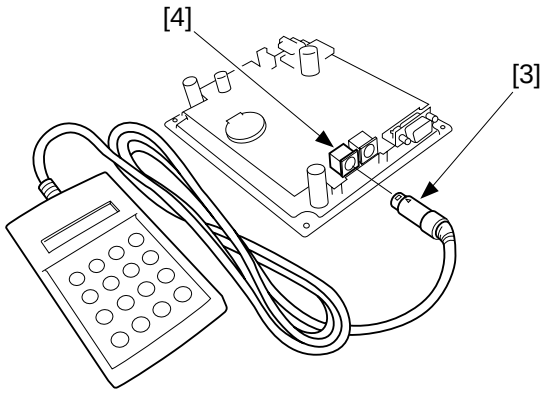

Figure 11-615

7) Press the switch (SW2) on the copy data controller to start service mode.

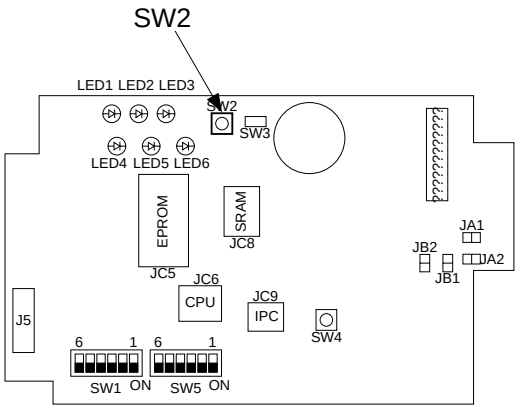

Figure 11-616

8) Set the input method.
   a) Set the card/ID input using the Numeric Keypad-A1. (Initially, card input is selected.)
   b) To change from card input to ID input, use the Numeric keypad-A1.
      To change from ID input to card input (requires the Card Required-A1), go to d).
      'MANAGE=CARD' appears.
   c) Press '2', and then press 'ENT'.
      'MANAGE=ID' appears.

d) To change to card input,
When 'MANAGE=ID' has appeared, press '1', and then press 'ENT'.
MANAGE=CARD' appears.

Code	Input method
1	Card
2	ID

Table 11-602

Caution:

1. If bit 4 of the DIP switch (SW5-4) on the copy data controller is set to OFF, group control is disabled, and an exclamation mark will appear (Figure 11-617).
2. If the copier's memory has been used for ID input, the stored ID numbers may be used as ID numbers for the copy data controller.
Work as follows:

Figure 11-617

■ Drawing up the ID Numbers

a) Set the DIP switch (SW1) on the coyy data controller as shown in the table.

	Bit	Position
SW1	1,2	ON
	3	OFF

Table 11-603

b) Press the switch (SW4) on the copy data controller.
In response, LED5 will turn on momentarily.

c) LED5 will turn on when data has been drawn.
If the attempt fails, LED5 will flash; if this is the case, press the switch (SW4) once again, and make sure that LED5 has turned on.
The copier cannot discharge paper while data is being drawn.

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d) Set the DIP switch (SW1) on the copy data controller as indicated in Table 11-604. At this time, LED5 turns off.

SW1	Bit	Position
	1,2,3	OFF

Table 11-604

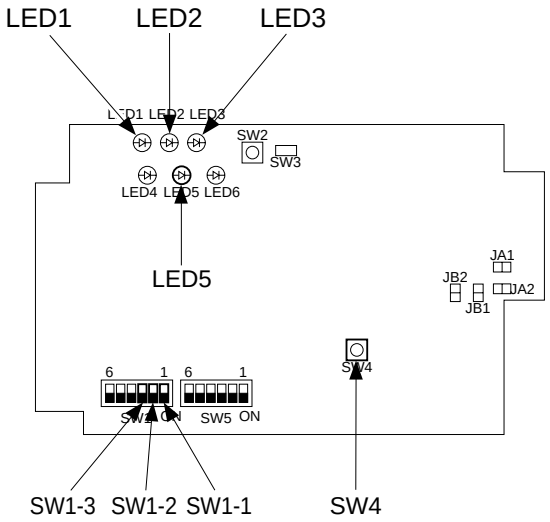

Figure 11-618

9) Set the control method.
   a) Use the Numeric Keypad-A1 to select the control method as follows: Press ▽ and △ so that 'FORMAT=1' appears.
   b) Select the appropriate control type number to suit the type of copier and the user's needs as shown in the table; initially, '1' is selected.
   c) To set the control type number to '3',
   1. 'FORMAT=1 appears. Since it is initially '1', change it to '3' as follows:
      Press '3'.
      Press 'c' so that the existing input is cleared, ready for another input.
      As needed, press 'ESC' to cancel.

No.	Number of groups	Paper size	Mode
1	3000	5	
2	1000	5	Single-sided/ double-sided
3	1000	5	Mono/2-color/full-color

Figure 11-605

2. When 'FORMAT=3-' has appeared, press 'ESC'.
3. 'FORMAT=3-' appears, and the cursor flashes for a while, during which formatting takes plate. At the end, the control method number is set to '3'.

Caution:

When the control method number has been changed, data on unit price, upper limit, counter, and ID numbers are gone; enter the data as necessary.

10) Select the control paper size as follows:
   a) Set the control paper size using the DIP switch on the copy data controller and the Numeric Keypad-A1; if the existing control paper size is to be used, go to step 11).
   b) Press ▽ / △ to scan through the paper sizes. (Note, however, you cannot change 'OTH', and it is not shown.)

EX.

1. 'SIZE 1=A3' appears.
2. Press ▽.
3. 'SIZE 2=A4' appears.
4. Press ▽.
5. 'SIZE 3=B4' appears.
6. Press ▽.
7. 'SIZE 4=B5' appears.
8. Press △.
9. 'SIZE 3=B4' appears.
10. Press △.
11. 'SIZE 2=A4' appears.

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EX. To change B4 for control paper size to LGL,

1. Press ▽ / △ so that 'SIZE3=B4' appears.
2. Look for the code for LGL in the conversion table (Table 11-606), and enter it (i.e., 1 and 3).
3. 'SIZE3=13' appears.
4. Press 'ENT'.
5. 'SIZE=3LGL' appears to indicate that the change has been stored.

Caution

1. You cannot set the same paper size code for different size fields (SIZE 1 through 4).
2. The counter readings will remain intact after the change.

c. Conversion Table

Size	Code	Size	Code
B5	1	Postcard	25
FOOLS	2	U LARGE 2	26
A4	3	GLTR	27
B4	5	10 x 8	28
A3	7	GLGL	29
U SMALL (US)	8	KLGL	33
STMT	9	OFFICIO	35
U LARGE (UL)	10	EOFFICIO	36
LTR	11	AOFFICIO	37
LGL	13	BOFFICIO	38
LDR (11 x 17)	15	ALT R	39
A5	17	ALGL	41
AFOOLS	18	12 x 8	48
46	19	B3	49
FOLIO	21	A2	50
COMPUTER	23	17 x 22	51
U SMALL 2	24	18 x 24	52

Table 11-606

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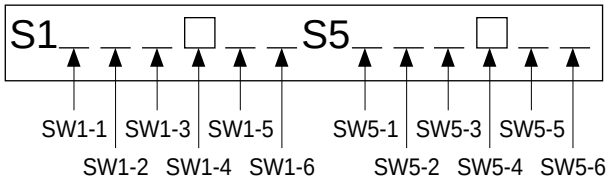
11) Check the settings of the DIP switches:
   a. Shift bit 3 of the DIP switch (SW5-3) on the copy data controller to OFF.
   b. Press ∨/∧ so that the settings of the DIP switches (SW1, SW5) on the copy data controller will appear.



□ : indicates that the bit is at ON.
__ : indicates that the bit is at OFF.

Figure 11-619

   c. Check the settings of the DIP switches (SW1, SW5) on the copy data controller. (See Table 11-601.)
   If the settings are wrong, go back to "Setting the Board," and make the correct settings.
   If you are setting up the Interface Board-B1, Interface Board-A1, or Communication Control Board-A1 as an option, see its respective Installation Procedure.
   d. Press the switch (SW2).

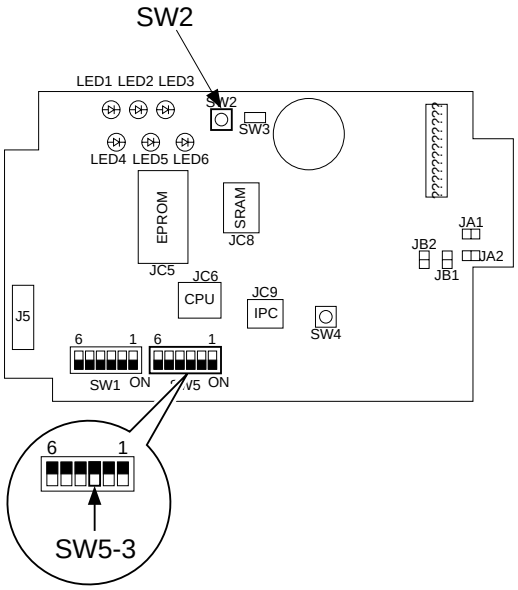


Figure 11-620

   e. Check that the display of the Numeric Keypad-A1 shows the following, and disconnect the keypad.

Figure 11-621

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12) Attach the Switch Settings label [6] to the top cover [5], and record the settings of the switches on the label.

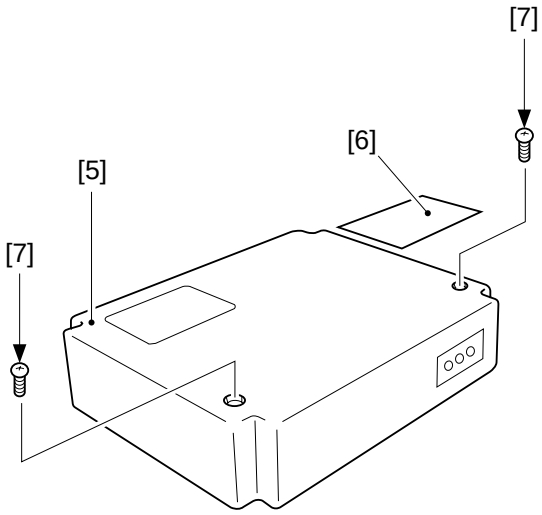

Figure 11-622

13) Secure the top cover with two screws [7]. When doing so, check to make sure that the cable of the power supply unit is secured in place to the cable guide found inside the unit and, in addition, it is not trapped by the upper cover.
14) If you are connecting the Control Card Printer A-1, connect it to the connector J4 of the copy data controller. (As necessary, use a relay cable.)

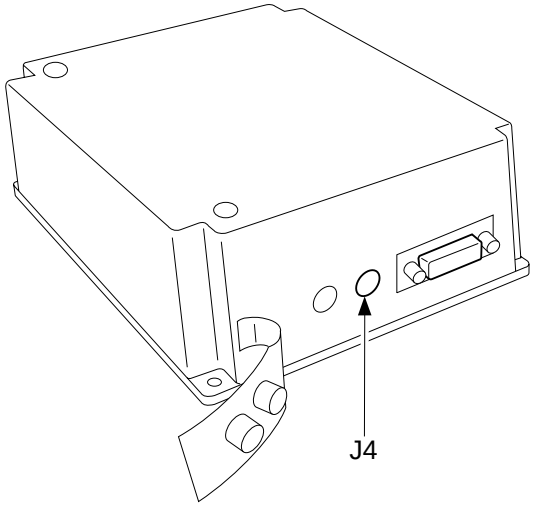

Figure 11-623

15) Check to make sure that the cable is all inside the copy data controller, and end the installation work.
Attach the petty-pull [8] to the right bottom of the copier's rear.
16) Fix the cable connecting to the copy data controller in place to the petty-pull.
17) Check to make sure that no cable is trapped by the casters of the copier or the sorter.

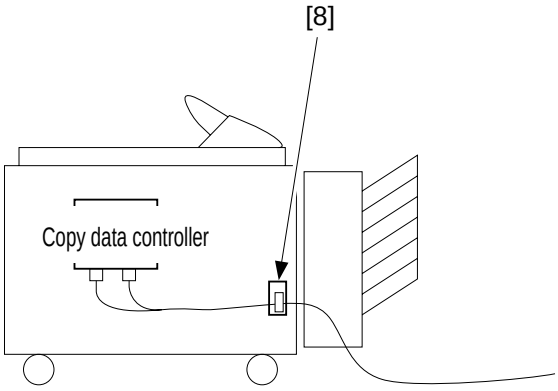

Figure 11-624

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4. Removing from the Copier

When removing the copy data controller from the copier, start service mode, and execute COPIER>OPTION>IN-FACE>B-CLR.

0: not connected.

1: connected.

If the setting is not '0', a communication error 'E717' (between copy data controller and copier) will occur.

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VII. INSTALLING THE REMOTE DIAGNOSTIC DEVICE II

Note:
The Remote Diagnostic Device II is not available in certain sales areas.

1. Installing to the Copier

When installing the diagnostic device to the copier, keep the following in mind:

1. Be sure to comply with the laws and regulations of the country.
2. Be sure that the copier has been properly installed.
3. Be sure that the copier's power plug is disconnected.
4. Be sure to identify the screws by type (length, diameter) and location.
5. Be sure to prepare setting data on the computer at the service station.

1) Remove the two screws [2], and detach the top cover.

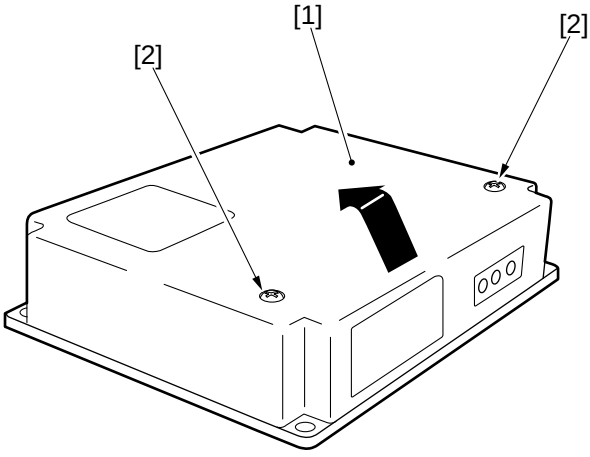

Figure 11-701

2) Connect the connector [3] of the power supply unit to the connector [4] of the diagnostic device as shown.

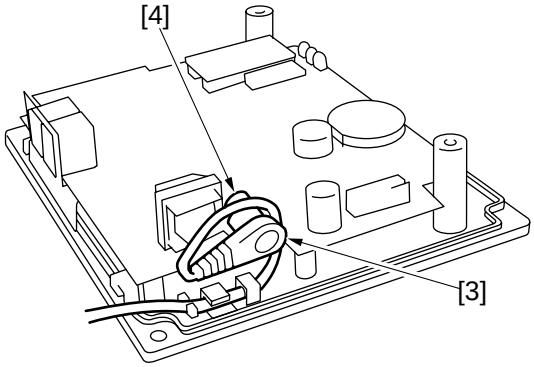

Figure 11-702

3) Remove the four screws [6], and detach the face plate [5] of the copier's rear cover.

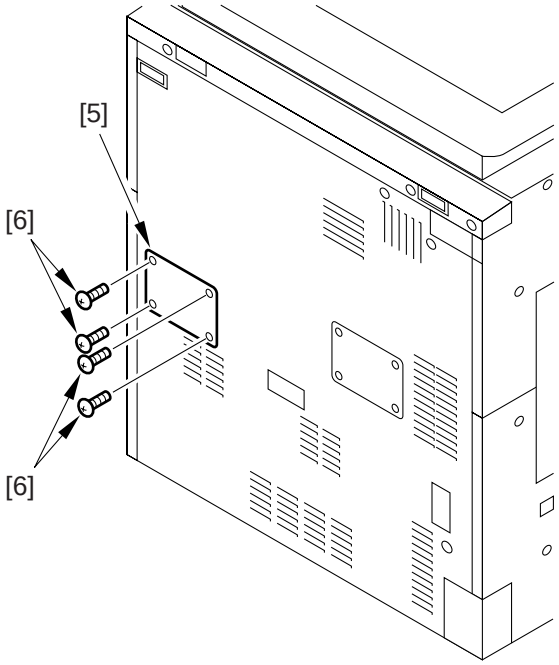

Figure 11-703

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4) Connect the 8-pin connector [7] of the diagnostic device and the 8-pin connector [8] of the copier side.

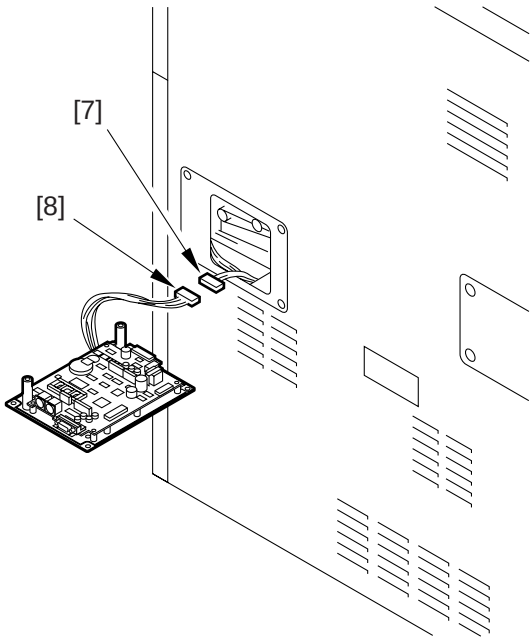

Figure 11-704

5) Secure the diagnostic device [9] to the copier's rear cover with four screws [10]. (Use the screws that come with the unit.)

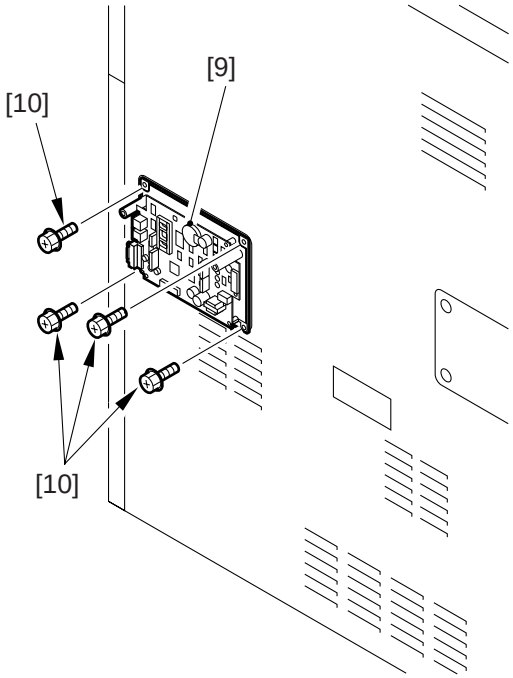

Figure 11-705

6) Remove the slack from the cable between the copier and the diagnostic device, and bundle the excess length of the cable on the diagnostic device side; then, fix the bundle in place with the harness band [11].

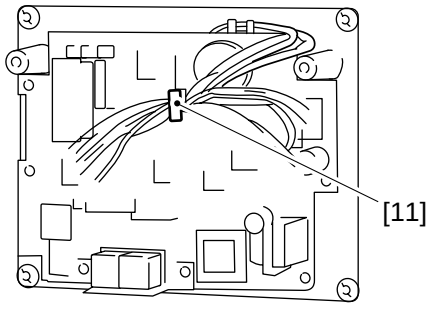

Figure 11-706

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7) Shift bit 4 of the DIP switch (SW2-4) [12] on the PCB to ON (so that the mode of communication between the copier and the diagnostic device is IPC).

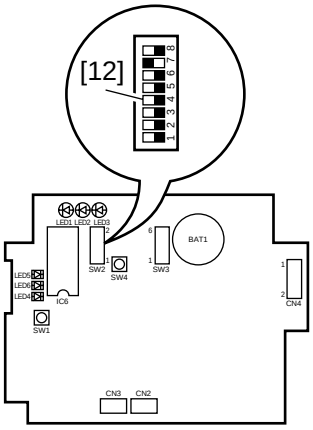

Figure 11-707

8) If IC6 [13] is mounted on the PCB, shift bit 7 of the DIP switch [14] (SW2-7) to ON; if not, shift it to OFF.

Caution:

1. If IC6 [13] is not mounted, you need not mount it newly.
2. If you are mounting a ROM (IC6) [13] or replacing it as when upgrading the diagnostic device, be sure to shift bit 7 of the DIP switch [14] (SW2-7) to ON.

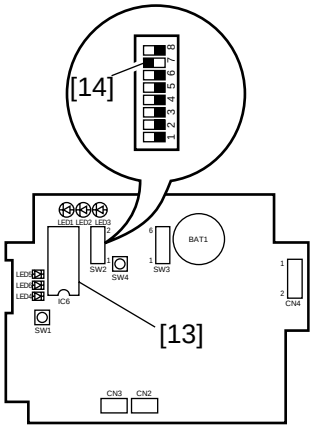

Figure 11-708

9) Set the DIP switch (SW3) [15] on the PCB as shown in the table.

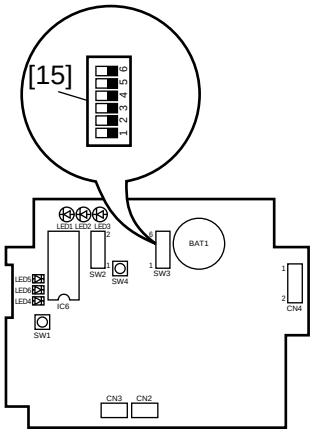

Figure 11-709

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<table>
<tr><th>Switch</th><th>Position</th><th>Description</th></tr>
<tr><td>SW3-1
SW3-2</td><td>See right.</td><td>
<table>
<tr><th>SW3-1</th><th>SW3-2</th><th>Function</th></tr>
<tr><td>OFF</td><td>OFF</td><td>Sets the signal transmission level of the modem to -16 dBm.</td></tr>
<tr><td>ON</td><td>OFF</td><td>Sets the signal transmission level of the modem to -14 dBm.</td></tr>
<tr><td>OFF</td><td>ON</td><td>Sets the signal transmission level of the modem to -12 dBm.</td></tr>
<tr><td>ON</td><td>ON</td><td>Sets the signal transmission level of the modem to -10 dBm.</td></tr>
</table>
</td></tr>
<tr><td>SW3-3</td><td>OFF</td><td>Keep it to OFF at all times.</td></tr>
<tr><td>SW3-4</td><td>ON
OFF</td><td>Use it to set the line to push pulse mode.
Use it to set the line to dial pulse mode.</td></tr>
<tr><td>SW3-5</td><td>ON
OFF</td><td>Use it to set the dial pulse speed to 20 pps.
Use it to set the dial pulse speed to 10 pps.</td></tr>
<tr><td>SW3-6</td><td>—</td><td>Not used.</td></tr>
</table>

Table 11-701

10) Connect the power plug to the power supply unit, and check to make sure that LED1 [16] (green) on the PCB turns on.

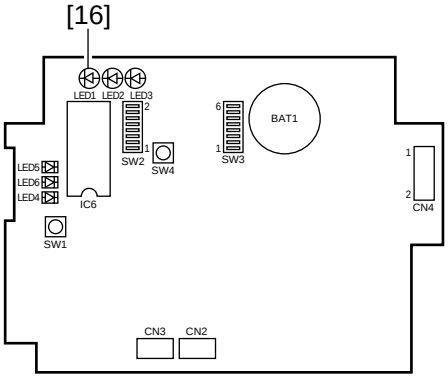

Figure 11-710

11) Execute RAM initialization. Set the DIP switch [17] (SW2) on the PCB as shown, and press the push switch [18] (SW4). In response, LED5 [19] (red) should turn on.

Bits of SW2	Setting
SW2-1	OFF
SW2-2	OFF
SW2-3	ON
SW2-4	ON
SW2-5	OFF
SW2-6	OFF
SW2-7	See step 8).
SW2-8	OFF

Table 11-702

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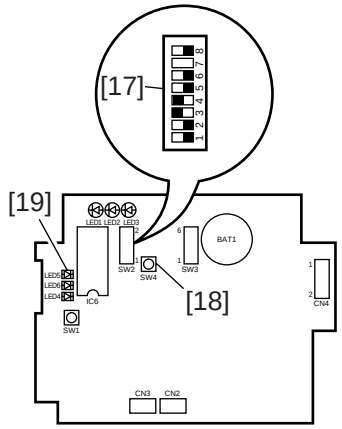

Figure 11-711

12) When LED5 [19] (red) has turned on, see the DIP switch [17] (SW2) as shown, and press the push switch [18] (SW4).
In response LED5 [19] should turn off, indicating that the RAM has been initialized.

Bits of SW2	Setting
SW2-1	OFF
SW2-2	OFF
SW2-3	OFF
SW2-4	ON
SW2-5	OFF
SW2-6	ON
SW2-7	See step 8).
SW2-8	OFF

Table 11-703

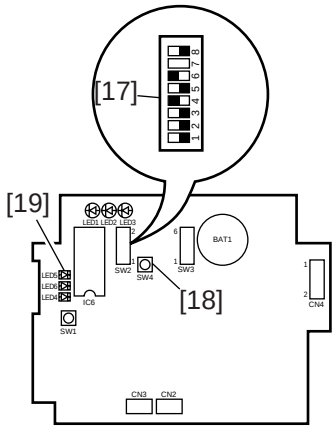

Figure 11-712

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13) Shift bit 6 of the DIP switch [20] (SW2-6) on the PCB to OFF.

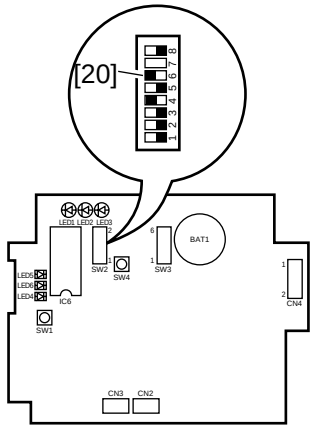

Figure 11-713

14) Connect the telephone line to the diagnostic device.
If you are connecting the diagnostic device on its own, connect the modular jack cable to the connector LINE [21].
If you are using the extension function of the diagnostic device, connect the existing telephone or fax machine to the connector TEL [22], and then connect the telephone cable to the connector LINE [21].

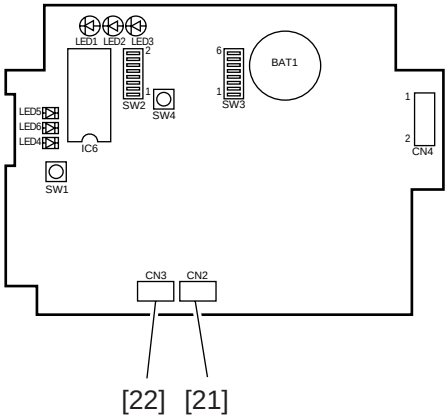

Figure 11-714

15) Call the service station, and request initial settings. (Upon reception, LED4 [23] (red) will start to flash.)

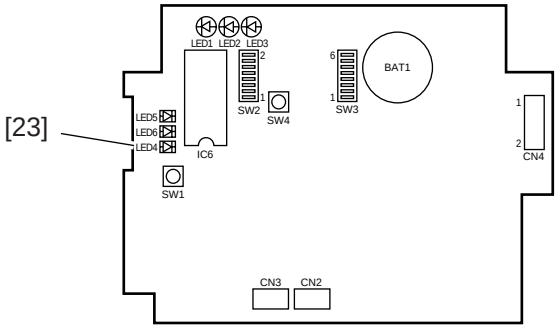

Figure 11-715

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16) Call the service station, and find out whether initial settings work has ended. If it ended in failure, start over by repeating steps 11) through 13), i.e., from initializing the RAM, and complete initial settings.

Caution:
Be sure to find out whetehr the settings of the diagnostic device are correct by referring to the settings kept at the service station.

17) Check to find out whether a call may be placed to the computer at the service station using the diagnostic device.
Press the push switch [18] (SW4) on the PCB. In response, LED6 [24] (red) will turn on: if the transmission ends successfully, LED6 [24] (red) will turn off; if it ends in failure, it will start to flash.
If you press the push switch SW4 [18] while LED6 [24] is flashing, transmission will occur once again.
If you press the push switch (SW1) [25] while LED6 [24] is flashing, transmission will be canceled.

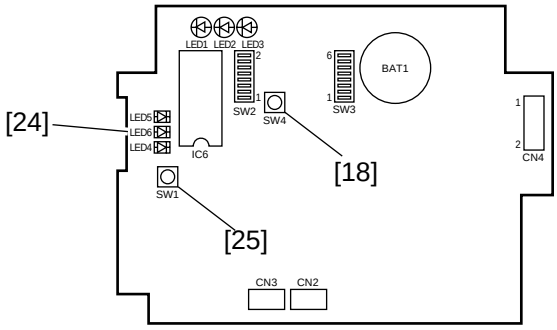

Figure 11-716

18) Check to make sure that communication between diagnostic device and copier is normal.
Connect the copier's power plug, and turn on the power switch to make user that LED2 [26] (orange) flashes.

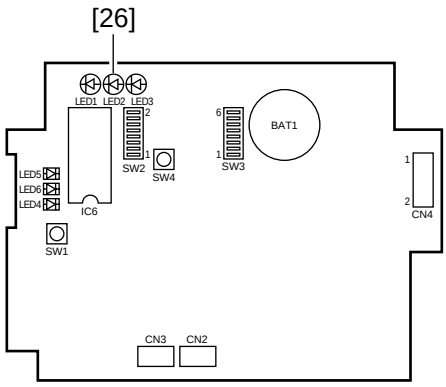

Figure 11-717

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19) Press the copier's Copy Start key, and check to make sure LED3 [27] (pink) flashes each time delivery occurs.

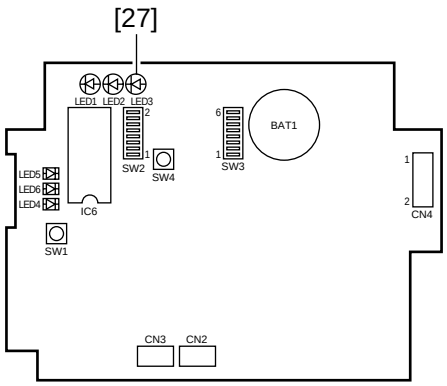

Figure 11-718

20) Attach the switch settings label [28] to the top cover, and record the settings of the switches.
21) Secure the top cover [1] in place with two screws [2]. When doing so, check to make sure that the cable is secured to the cable guide inside the diagnostic device and is not trapped by the top cover [1].

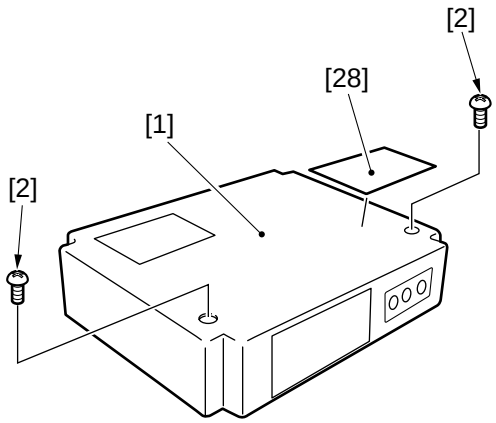

Figure 11-719

VIII. INSTALLING THE CASSETTE HEATER

1) Open the shipping box of the cassette heater, and check to make sure that the following is available:
   [1]Cassette heater for 200-V model (FG2-9812-000) ..... 1 pc.
   [2] Relay harness (FG6-2422-000) ..... 1 pc.
   [3]Screw (XA9-0628-000) ..... 2 pc.

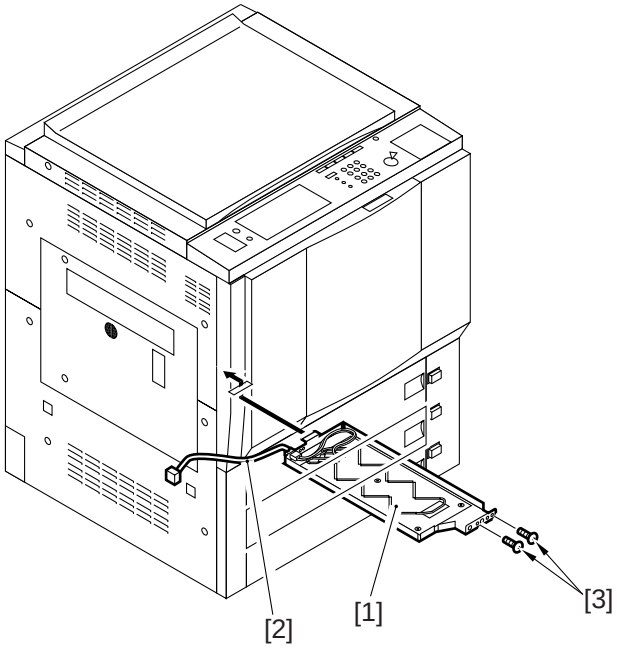

Figure 11-801

2) Turn off the copier's power switch, and disconnect the power plug from the power outlet.
3) Slide out the cassettes 1 and 3 (1, 2, and 3 in the case of the CLC1130), and remove the inside cassette from each.

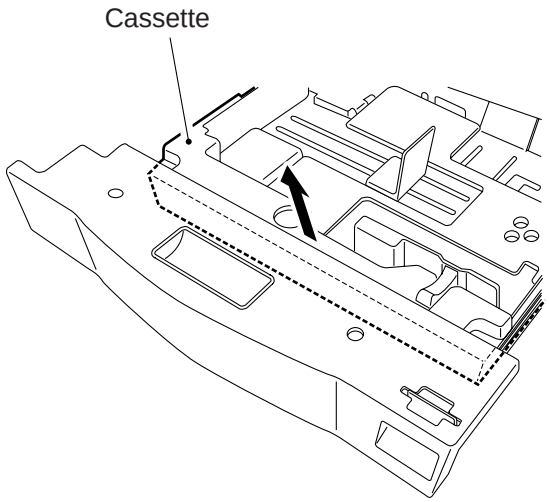

Figure 11-802

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4) Remove the four screws, and detach the copier's left lower cover.

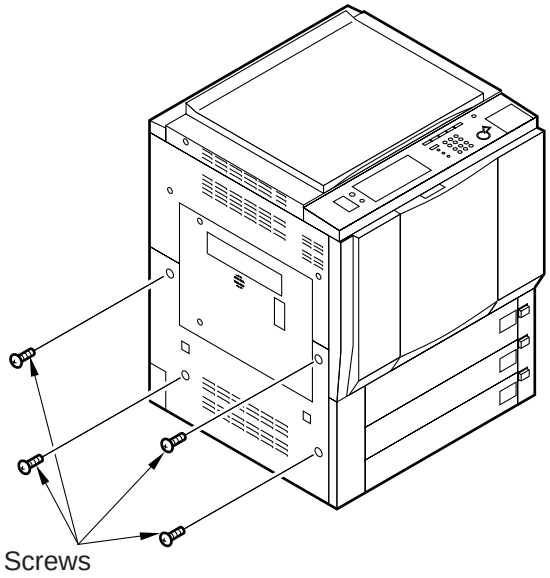

Figure 11-803

5) Open the cable guide, and put the 3-pin end of the relay harness inside. (If the guide is difficult to open, use a screwdriver.)

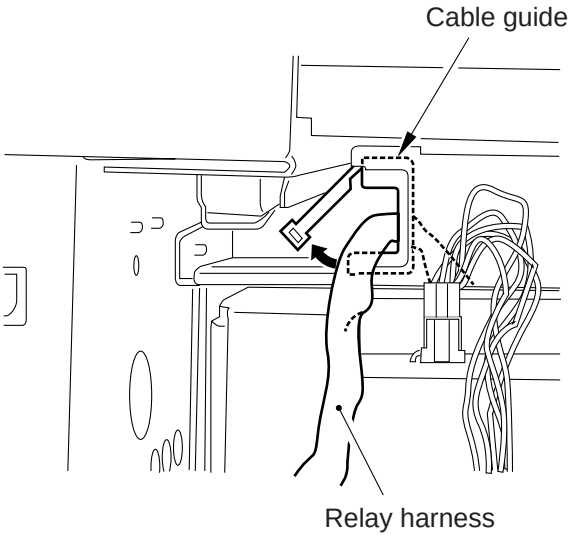

Figure 11-804

6) Connect the 2-pin end of the relay harness to the copier's connector.

Caution:

If you are installing the cassette heater to the CLC1130, make the following connections:

- relay harness of the upper cassette heater with the lower connector on the copier side
- relay harness of the lower cassette heater with the upper connector on the copier side

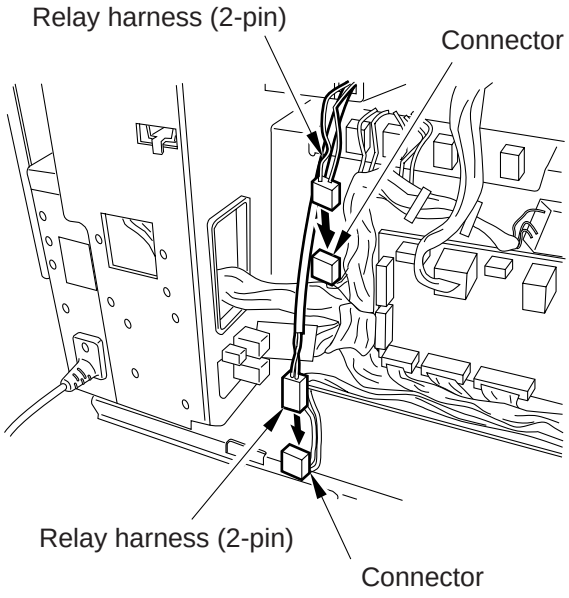

Figure 11-805

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7) Lead the relay harness outside the rail of the cassette as shown, and connect its 3-pin end to the connector of the cassette heater.

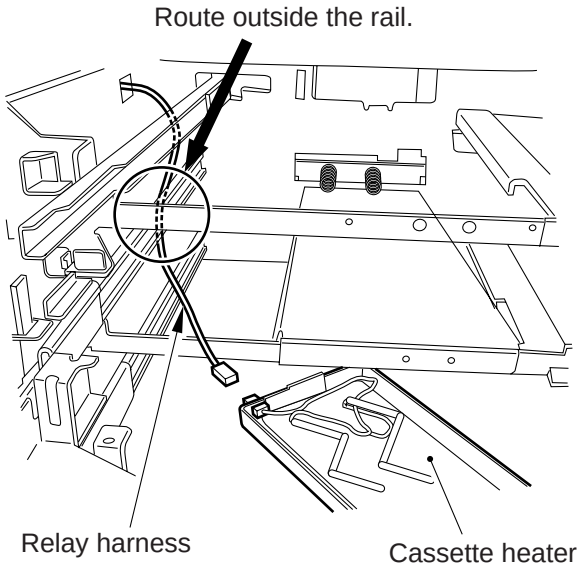

Figure 11-806

8) Secure the relay harness in place with the guides. (Be sure to fix it in place at four locations and that its band position is to the right of the cable guides as shown.)

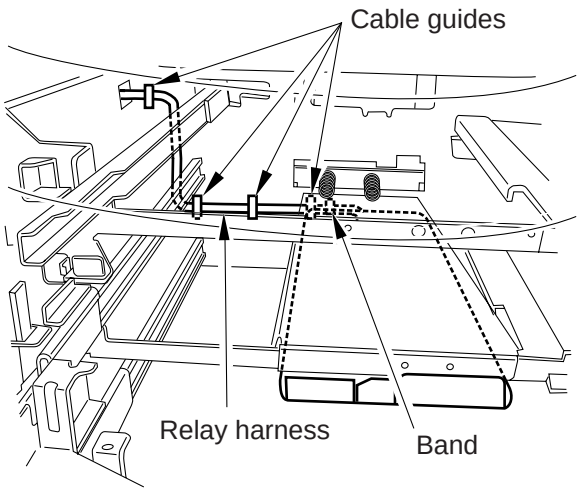

Figure 11-807

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9) Fit the cassette heater into the groove found at the rear of the cassette 1 stay.
In the case of the CLC1130,
- If you are installing the cassette heater for the upper cassette, fit it into the groove found at the rear of the cassette 1 stay.
- If you are installing the cassette heater for the lower cassette, fit it into the groove found at the rear of the cassette 2 stay.

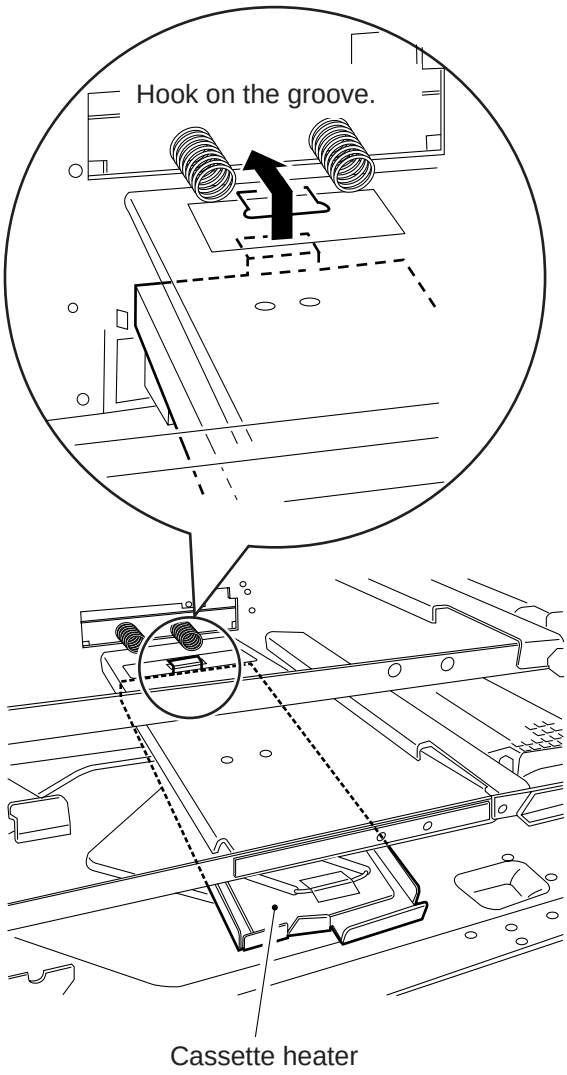

Figure 11-808

10) Mount the cassette heater to the stay of the cassette with two screws.

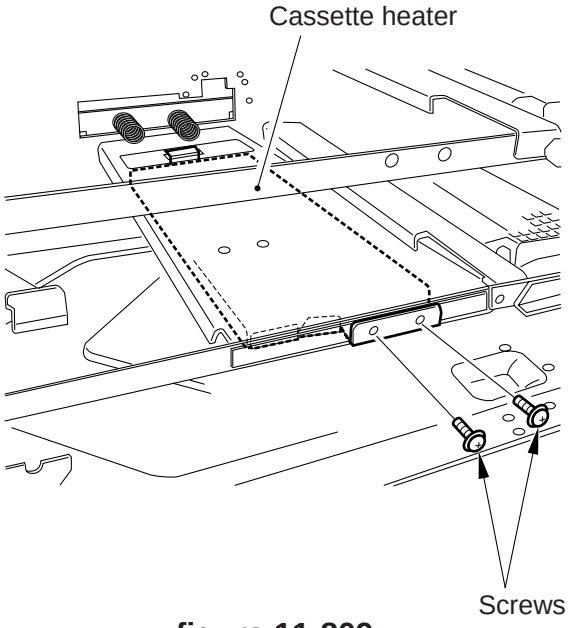

figure 11-809

11) Mount the inside cassette to each pickup cassette.

Caution:
Take care not to mistake the inside cassette for the universal cassette.

12) Turn on the cassette heater switch (SW8) found to the left bottom of the copier.
13) Mount the copier's left bottom cover.

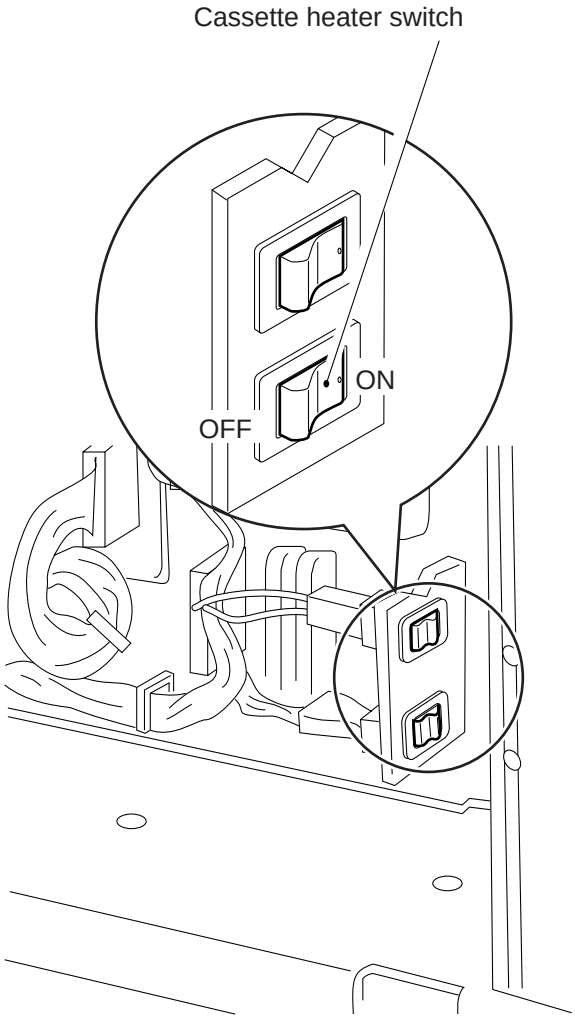

Figure 11-810

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CHAPTER 12

MAINTENANCE AND SERVICING

This chapter discusses how the copier's parts may be inspected and serviced.

I. PERIODICALLY REPLACED PARTS 12-1
II. CONSUMABLES AND DURABLES 12-2
A. Copier 12-2
B. Side Paper Deck 12-3
III. SCHEDULED SERVICING CHART 12-4
IV. SCHEDULED SERVICING LIST 12-6
A. Copier 12-6
B. Side Paper Deck 12-7

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I. PERIODICALLY REPLACED PARTS

As of February 1999

No.	Part name	Part number	Q'ty	Life (copies)	Remarks
1	Ozone filter (FM2, 5, 6)	FB2-4397-000	3	25,000	Or, 1 yr.
2	Air filter (FM1)	FB4-4819-000	1	25,000	Or, 1 yr.
3	Air filter (FM3)	FF5-8405-000	1	25,000	Or, 1 yr.
4	Air filter (FM14, 15)	FB2-0247-040	2	25,000	Or, 1 yr.
5	Toner filter (FM5, 6)	FB4-4442-000	2	25,000	Or, 1 yr.
6	Ozone filter (FM5)	FB4-9641-000	1	25,000	Or, 1 yr.

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II. CONSUMABLES AND DURABLES

A. Copier

As of February 1999

No.	Part name	Part number	Q'ty	Life (copies)	Remarks
1	Cleaner blade (drum cleaner assembly)	FB4-4677-000	1	20,000	Simultaneously with photosensitive drum.
2	Drum cleaner scoop-up sheet	FF5-3993-000	1	20,000	Simultaneously with cleaning blade.
3	Side seal, front (drum cleaner assembly)	FF5-8392-000	1	20,000	Simultaneously with cleaning blade.
4	Side seal, rear (drum cleaner assembly)	FF5-8393-000	1	20,000	Simultaneously with cleaning blade.
5	No. 2 scoop-up sheet (pre-cleaning sensor)	FG6-1046-000	1	20,000	Simltaneously with cleaning blade.
6	Grid plate (primary charging assembly)	FB4-5117-000	1	20,000	For high temperature/high humidity, 15,000.
7	Primary charging assembly cleaning pad, upper	FF2-3552-000	1	20,000	For high temperature/high humidity, 15,000.
8	Primary charging assembly cleaning pad, lower	FF2-3551-000	1	20,000	
9	Primary charging wire, 100V	FY3-0030-000	1	20,000	For high temperature/high humidity, 15,000.
	Primary charging wire, 120/230V	FY3-0040-000	1	20,000	
10	Scanning lamp	FH7-3349-000	1	25,000	
11	Manual feeder pickup roller	FF5-4327-000	2	25,000	Manual feeder counter reading.
12	Manual feeder feed roller	FF5-4331-000	1	25,000	Manual feeder counter reading.
13	Manual feeder separation roller	FF2-4710-000	1	25,000	Manual feeder counter reading.
14	Attraction roller scraper				
15	Waste toner case (6 pc/box)	FF5-8427-000	1	25,000	
16	Post-cleaning charging wire	FY9-7006-000	1	25,000	By user.
	Post-cleaning charging wire	FY3-0030-000	1	25,000	100V
17	Fixing cleaning belt (upper, lower)	FY3-0040-000	1	25,000	120/230V
		FB4-4543-000	1	25,000	
18	Drum cleaner end felt, front				
19	Drum cleaner end felt, rear	FF5-2246-000	1	40,000	Simultaneously with
20	No. 2 cleaning blade	FF5-2247-000	1	40,000	cleaning blade.
21	Fixing upper roller	FB2-0421-000	2	40,000	20,000 per edge.
22	Oil applying felt	FB4-4484-000	1	40,000	Or, 1 yr.
23	Y starter developer	FF5-9084-000	1	40,000	20,000 per side.
		F42-3132	1	40,000	
24	M starter developer	F42-3133	1	40,000	120V UL only.
		F42-3122	1	40,000	
25	C starter developer	F42-3123	1	40,000	120V UL only.
		F42-3112	1	40,000	
		F42-3113	1	40,000	120V UL only.

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No.	Part name	Part number	Q'ty	Life (copies)	Remarks
26	Bk starter developer	F42-3102	1	40,000	
		F42-3103	1	40,000	120V UL only.
27	Separation/internal and external static charging wires	FY3-0030-000	1	50,000	100V
	Separation/internal and external charging wires	FY3-0040-000	1	50,000	120/230V
28	Attraction brush unit	FG6-0798-000	1	50,000	As a unit.
29	Transfer blade unit	FG6-0797-000	1	50,000	As a unit.
30	Transfer drum cleaner	FB4-4953-000	2	50,000	
31	Polishing roller	FB4-5111-000	1	50,000	
32	Transfer drum sheet	FB4-4195-000	1	50,000	
33	Separation push-up roll	FB2-0631-000	1	50,000	Simultaneously with transfer sheet.
34	Transfer side scraper	FF5-2070-000	2	50,000	
35	Fixing lower roller	FB4-4486-000	1	50,000	Or, 1 yr.
36	Re-pickup feed roller, front (re-pickup assembly)	FF5-2101-000	1	100,000	Duplexing counter reading.
37	Re-pickup feed roller, rear (re-pickup assembly)	FF5-2102-000	1	100,000	Duplexing counter reading.
38	Feed roller (re-pickup assembly)	FF5-2103-000	1	100,000	Duplexing counter reading.
39	Separation roller (re-pickup assembly)	FF5-2104-000	1	100,000	Duplexing counter reading.
40	Feed roller, front (duplexing unit)	FF5-8366-000	1	100,000	Duplexing counter reading.
41	Feed roller, rear (duplexing unit)	FF5-8367-000	1	100,000	Duplexing counter reading.
42	Oil applying blade	FB4-4536-000	1	100,000	
43	Fixing heater, upper	FH7-4617-000	1	100,000	100V
		FH7-4618-000	1	100,000	120V
		FH7-4619-000	1	100,000	230V
44	Fixing heater, lower	FH7-4611-000	1	100,000	100V
		FH7-4612-000	1	100,000	120V
		FH7-4613-000	1	100,000	230V
45	Pre-exposure lamp	FG5-3181-000	1	150,000	
46	Primary charging assembly	FG6-0892-000	1	150,000	
47	Separation charging assembly	FG6-0795-000	1	150,000	
48	Internal static eliminator	FG6-0796-000	1	150,000	
49	Eternal static eliminator	FG6-0801-000	1	150,000	
50	Post-cleaning charging assembly	FG6-0888-000	1	150,000	
51	Insulating bush (fixing assembly)	FB4-7807-000	4	150,000	
52	Pickup roller, front (cassette)	FF5-7829-000	1	250,000	Per cassette holder.
53	Pickup roller, rear (cassette)	FF5-7830-000	1	250,000	Per cassette holder.
54	Separation roller (cassette)	FB2-7777-020	1	250,000	Per cassette holder.
55	Feed roller (cassette)	FF5-7837-000	1	250,000	Per cassette holder.
56	Y developing assembly	FG6-0781-000	1	500,000	
57	M developing assembly	FG6-0782-000	1	500,000	
58	C developing assembly	FG6-0783-000	1	500,000	
59	Bk developing assembly	FG6-0784-000	1	500,000	

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B. Paper Deck

As of February 1999

No.	Part name	Part number	Q'ty	Life (copies)	Remarks
1	Paper deck pickup roller	FB4-2033-000	2	250,000	Actual number of copies.
2	Paper deck feeding roller	FB4-2034-000	2	250,000	Actual number of copies.
3	Paper deck separation roller	FB2-7777-020	1	250,000	Actual number of copies.

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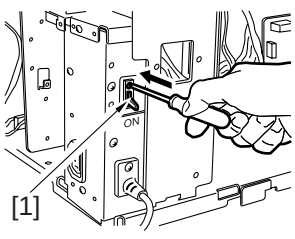
III. SCHEDULED SERVICING CHART

Note:

1. As a rule, provide scheduled servicing every 20,000 copies. (For high humidity, 15,000.)
2. Before setting out for a visit, check the service book, and take replacement parts as needed.

No.	Work	Checks	Remarks
1	Report to the person in charge.	Check the general conditions.	
2	Record the counter readings.	Check faulty copies.	
3	Check faulty copies.	a. images b. background for soiling c. characters for clarity d. leading edge margin e. left/right margin f. trailing edge margin g. fixing, registration (displacement), back for soiling h. abnormal noise i. counter operation	 Standard: 8.0 ±1.5 mm (Direct) Standard: 2.0 ±1.5 mm (Direct) Standard: 2.5 ±1.5 mm (Direct)
4	Make test copies in Direct, Reduce, and Enlarge. Provide scheduled servicing according to the number of copies made. (See p. 12-6.)		
5	Clean soiled areas inside the copier.		
6	Check waste toner/fixing oil.		
7	Make test copies.		
8	Execute auto gradation correction in user mode.		
9	Make sample copies.		
10	Press the test switch for the leakage breaker to make sure that it operates normally. After making a check, turn off the power switch, and shift the lever to ON; then, turn on the power switch.	Press the test switch when the power switch is at ON and, in addition, the lever [1] of the leakage breaker is at ON. If normal, the lever will shift to OFF to cut the power. If the lever does not shift to OFF, replace the leakage breaker. (Pay attention to its orientation during replacement.) After replacement, make a check one again.	

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No.	Work	Checks	Remarks
11	Put the sample copies in order. Clean up the area around the copier.		
12	Record the final counter readings.		
13	Fill out the service book, and report to the person in charge.	Record the history of checks on the leakage breaker in the service book.	

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IV. SCHEDULED SERVICING LIST

A. Copier

Caution:
Do not use solvents or oils other than those listed.

△ Clean ● Replace × Lubricate □ Adjust ◎ Inspect As of February 1999

Unit	Part	Intervals				Remarks
		every 20,000	every 25,000	every 40,000	every 50,000	
Externals and controls	Copyboard glass		△			Use alcohol.
	Copyboard cover		△			
	Ozone filter		●			Or, 1 yr.
	Air filter		●			Or, 1 yr.
	Toner filter		●			Or, 1 yr.
Original exposure	Original reflecting cover		△			Use blower brush.
	No. 1 through No. 3 mirrors, Lens		△			
	Scanner rail		△×			After cleaning, apply silicone oil.
Pickup/ feeding	Attraction, registration spring clutch				×	Use lubricant.
	Attraction roller		△			Remove unit, and clean.
	Attraction roller cleaner pan		△			Remove unit, and clean.
	Registration roller		△			Remove unit, and clean.
	Pre-registration roller 2		△			Remove unit, and clean.
	Pre-registration roller 1		△			
	Registration path middle guide		△			Clean the guide surface
	Pickup vertical path roller		△			
Transfer drum	Transfer drum cleaner		△		×	Apply lubricant to the busihg of the brush.
	Jam sensor metal plate (resin tape used for No.2 static eliminator mount)	△				
	Jam sensor metal plate (polishing roller motor mounting plate)		△			
Laser exposure	Dust-proofing glass		△			
Charging	Charging wire, shielding plate, block		△			Clean with lint-free paper; then, clean with alcohol. Be sure the part is completely dry before mounting. Do not use water. For low humidity and high temperature/high humidity, Clean every 20,000.
	Separation, external static eliminating wire		△			

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Unit	Part	Intervals				Remarks
		every 20,000	every 25,000	every 40,000	every 50,000	
Photosensitive drum area	No. 2 cleaner blade	△				Turn over blade.
	Black toner concentration sensor	△				See Note .
	Pre-cleaner sensor	△				Clean with cotton wad; see Note.
	Pre-exposure lamp filter			△		Clean when replacing photosensitive drum.
	Photosensitive drum butting block	△ (front)		△		Clean when replacing photosensitive drum.
	Drum heater slip ring					Dry wipe every 150.000 copeis.
Developing assembly	Photosensitive drum butting roll	△				Clean when replacing developer.
Fixing assembly	Fixing inlet guide	△				Use solvent.
	Lower roller separation claw		△			
	Oil applying blade	△				Use lint-free paper.
	Oil applying felt	△				Turn over felt.
	Thermistor	△				Dry wipe.
	Fixing oil			◎×		
Others	Waste toner		◎●			
	Hopper toner pan		△			Remove build up of toner.
	Leakage breaker		◎			

Note:

If you have cleaned the sensor, be sure to execute the following in service mode:

- For the black toner concentration sensor, FUNCTION>INSTALL>INIT-D.
- For pre-cleaning sensor, FUNCTION>SENS-ADJ>CLN-OFST.

B. Paper Deck

△ Clean ● Replace × Lubricate □ Adjust ◎ Inspect As of February 1999

Unit	Part	Intervals			Remarks
		every 25,000	every 40,000	every 250,000	
Pickup assembly	Feed roller, roll			△	

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CHAPTER 13

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Guide to the Troubleshooting Tables

The troubleshooting procedure tables used in this document are compiled by tabulating commonly found troubleshooting flow charts. Study the following for an idea of how you may use the tables; for example, if the problem is the absence of AC power,

Cause	Step	Checks	Yes/No	Action
Power plug (not connected)	1	Is the power plug connected to the power outlet?	NO	Connect the plug.
Covers (not closed fully)	2	Are the front door and the delivery cover closed fully?	NO	Close the door or the cover fully.
Power supply (absent)	3	Is the rated voltage present at the power outlet?	NO	Advise the user that the problem is not of the copier.
	4	Is the rated voltage present between J1-1 and -2? (J1 is found near the power cord base.)	YES	Go to step 6.

- If you want to find out the cause (part) of the problem in question, see the "Cause" column. In the case of "AC power is absent," you may suspect that the power plug is disconnected, covers are not closed fully, or main power is absent.
- If you want to find out the checks to make or actions to take for a specific problem, see the "Checks" or "Action" column. Answer the question in the "Check" column Yes or No; if Yes, take the action shown. Otherwise, go to the next step.

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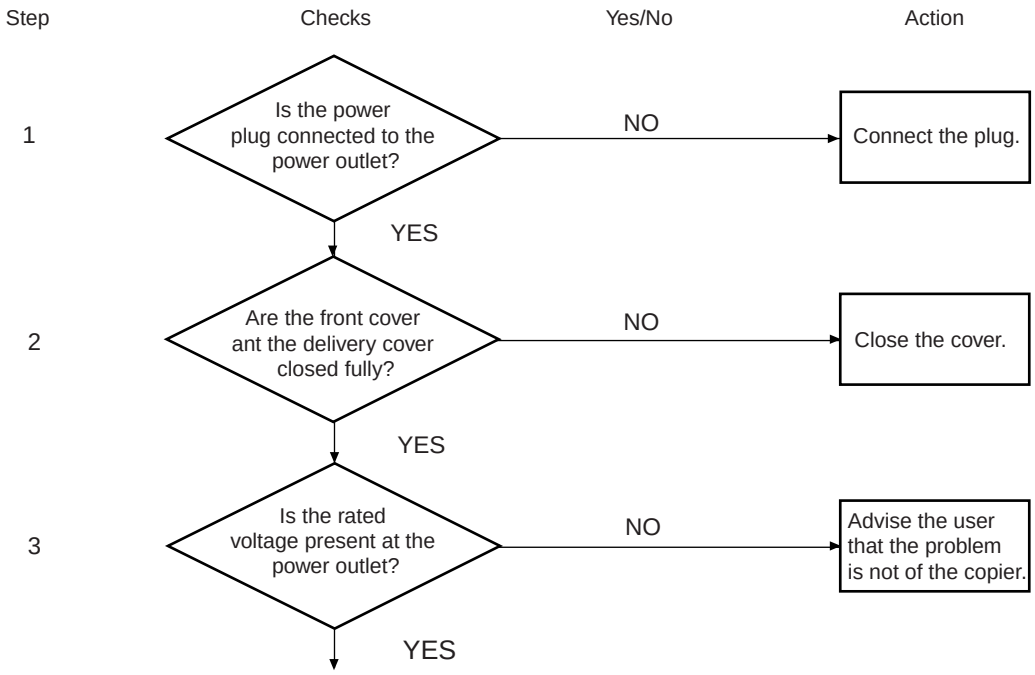

- When using a meter to check the voltage, you may come across a description reading: "measure the voltage between J109-1 (+) and -2 (-) on the DC controller PCB." Keep in mind that the symbols (+) and (+) indicate the positive and negative probes, respectively, of the meter; for example,
  for J109-1 (+), connect the positive probe to the terminal J109-1, and
  for J109-2 (-), connect the negative probe to the terminal J109-2.
- When you open the front left cover, the left door switch will turn off and, at the same time, the laser shutter will close.
  If you must operate the copier with its front left door open, you will have to insert the door switch actuator into the left door switch. **Do not insert a screwdriver or the like into the laser optical path at such times**.

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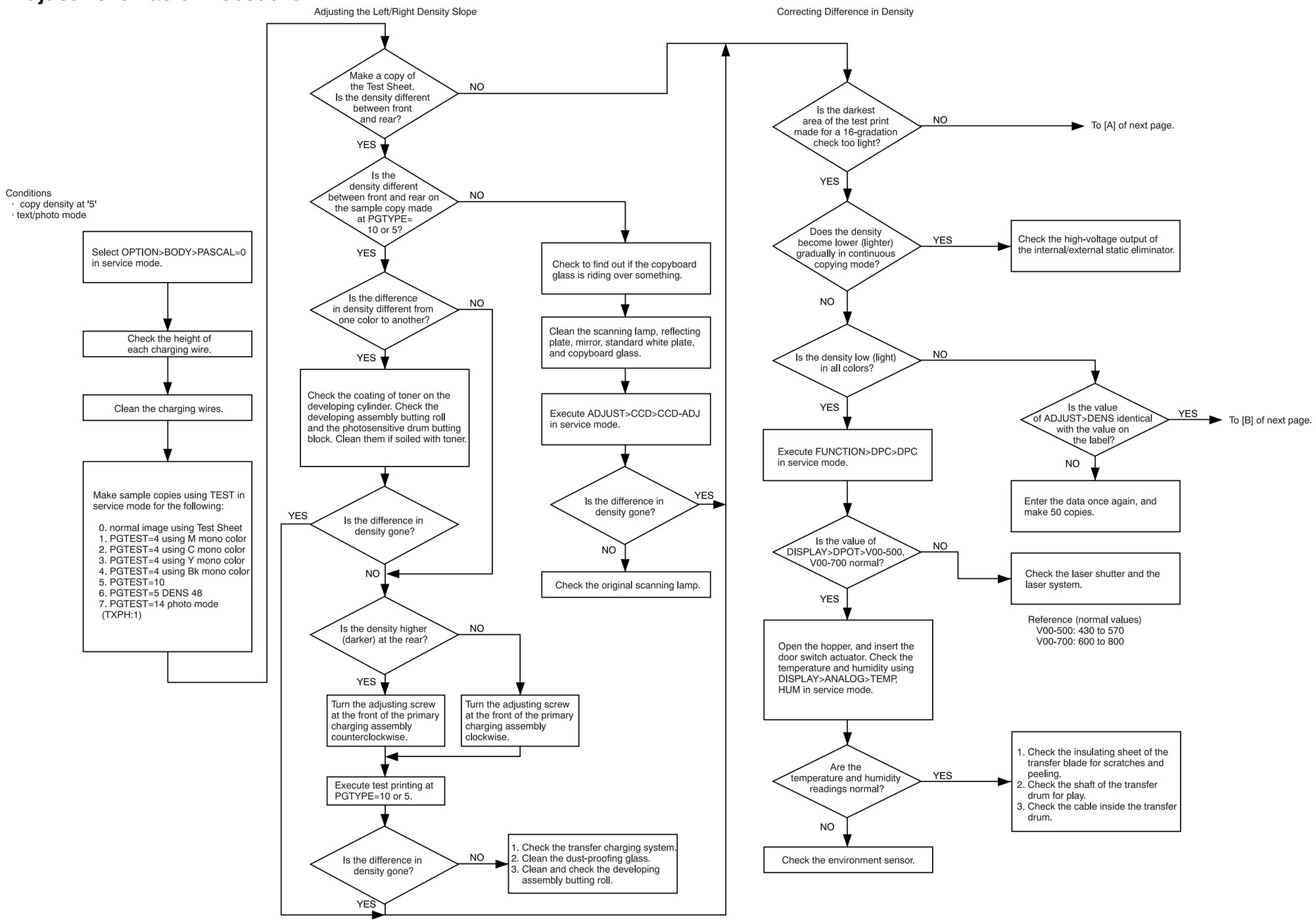
I. MAINTENANCE AND INSPECTION

A. Image Adjustment Basic Procedure


Adjusting the Left/Right Density Slope
Correcting Difference in Density
Conditions
· copy density at '5'
· text/photo mode
Select OPTION>BODY>PASCAL=0 in service mode.
Check the height of each charging wire.
Clean the charging wires.
Make sample copies using TEST in service mode for the following:
0. normal image using Test Sheet
1. PGTEST=4 using M mono color
2. PGTEST=4 using C mono color
3. PGTEST=4 using Y mono color
4. PGTEST=4 using Bk mono color
5. PGTEST=10
6. PGTEST=5 DENS 48
7. PGTEST=14 photo mode (TXPH:1)
Make a copy of the Test Sheet. Is the density different between front and rear?
NO
YES
Is the density different between front and rear on the sample copy made at PGTYPE= 10 or 5?
NO
YES
Is the difference in density different from one color to another?
NO
YES
Check the coating of toner on the developing cylinder. Check the developing assembly butting roll and the photosensitive drum butting block. Clean them if soiled with toner.
Is the difference in density gone?
YES
NO
Is the density higher (darker) at the rear?
NO
YES
Turn the adjusting screw at the front of the primary charging assembly counterclockwise.
Turn the adjusting screw at the front of the primary charging assembly clockwise.
Execute test printing at PGTYPE=10 or 5.
Is the difference in density gone?
NO
YES
1. Check the transfer charging system.
2. Clean the dust-proofing glass.
3. Clean and check the developing assembly butting roll.
Check to find out if the copyboard glass is riding over something.
Clean the scanning lamp, reflecting plate, mirror, standard white plate, and copyboard glass.
Execute ADJUST>CCD>CCD-ADJ in service mode.
Is the difference in density gone?
YES
NO
Check the original scanning lamp.
Is the darkest area of the test print made for a 16-gradation check too light?
NO
To [A] of next page.
YES
Does the density become lower (lighter) gradually in continuous copying mode?
YES
Check the high-voltage output of the internal/external static eliminator.
NO
Is the density low (light) in all colors?
NO
YES
Is the value of ADJUST>DENS identical with the value on the label?
YES
To [B] of next page.
NO
Enter the data once again, and make 50 copies.
Execute FUNCTION>DPC>DPC in service mode.
Is the value of DISPLAY>DPOT>V00-500, V00-700 normal?
NO
Check the laser shutter and the laser system.
Reference (normal values)
V00-500: 430 to 570
V00-700: 600 to 800
YES
Open the hopper, and insert the door switch actuator. Check the temperature and humidity using DISPLAY>ANALOG>TEMP, HUM in service mode.
Are the temperature and humidity readings normal?
YES
1. Check the insulating sheet of the transfer blade for scratches and peeling.
2. Check the shaft of the transfer drum for play.
3. Check the cable inside the transfer drum.
NO
Check the environment sensor.

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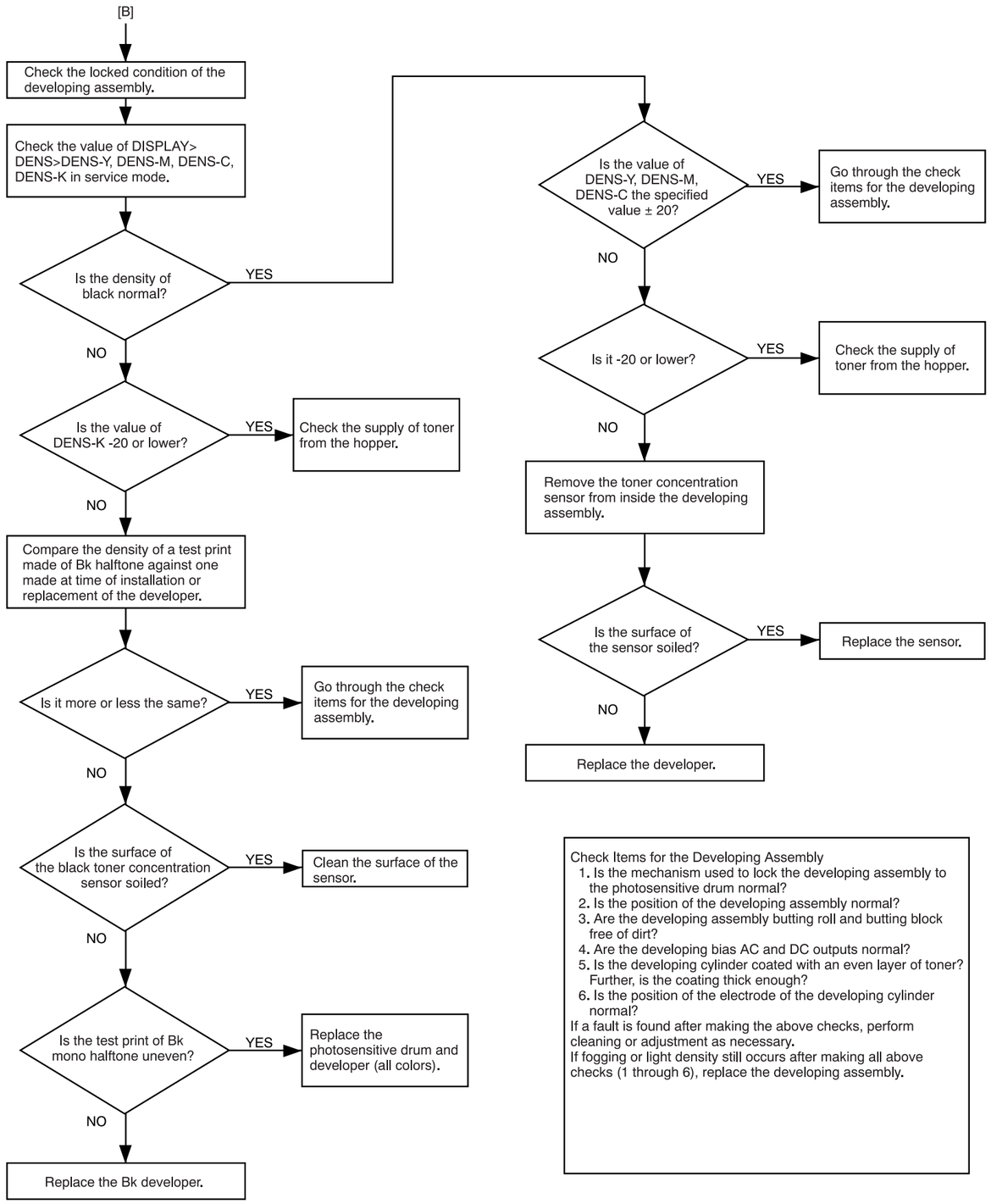
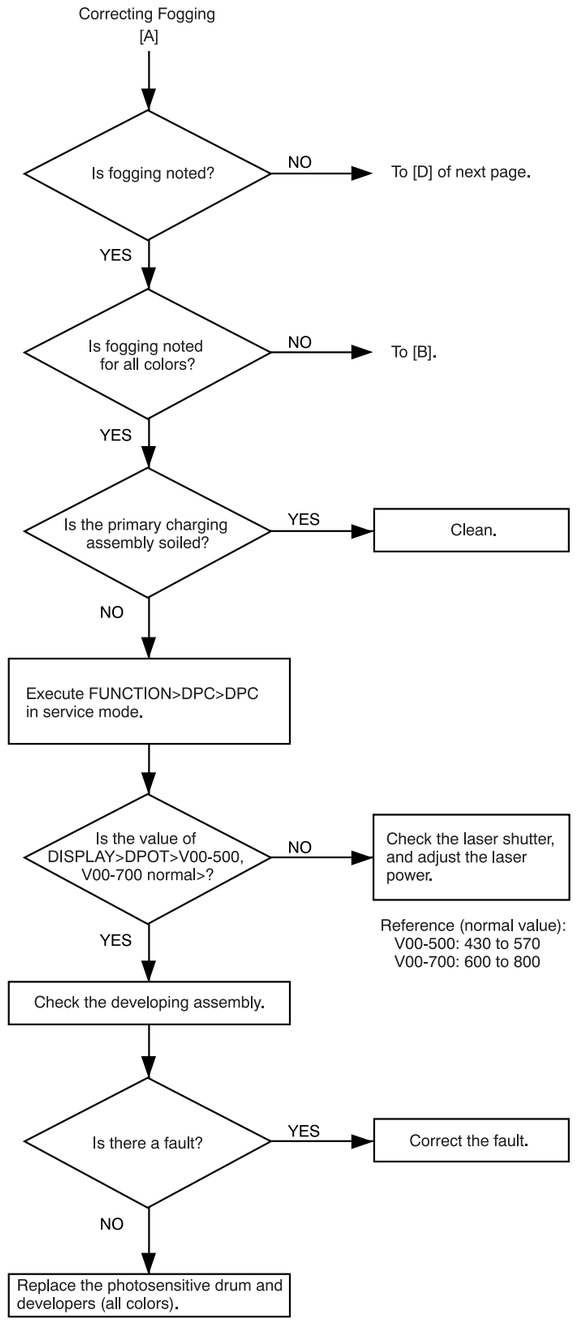

[B]
Check the locked condition of the developing assembly.
Check the value of DISPLAY> DENS>DENS-Y, DENS-M, DENS-C, DENS-K in service mode.
Is the density of black normal?
YES
NO
Is the value of DENS-K -20 or lower?
YES
Check the supply of toner from the hopper.
NO
Compare the density of a test print made of Bk halftone against one made at time of installation or replacement of the developer.
Is it more or less the same?
YES
Go through the check items for the developing assembly.
NO
Is the surface of the black toner concentration sensor soiled?
YES
Clean the surface of the sensor.
NO
Is the test print of Bk mono halftone uneven?
YES
Replace the photosensitive drum and developer (all colors).
NO
Replace the Bk developer.
Is the value of DENS-Y, DENS-M, DENS-C the specified value ± 20?
YES
Go through the check items for the developing assembly.
NO
Is it -20 or lower?
YES
Check the supply of toner from the hopper.
NO
Remove the toner concentration sensor from inside the developing assembly.
Is the surface of the sensor soiled?
YES
Replace the sensor.
NO
Replace the developer.

Check Items for the Developing Assembly

1. Is the mechanism used to lock the developing assembly to the photosensitive drum normal?
2. Is the position of the developing assembly normal?
3. Are the developing assembly butting roll and butting block free of dirt?
4. Are the developing bias AC and DC outputs normal?
5. Is the developing cylinder coated with an even layer of toner? Further, is the coating thick enough?
6. Is the position of the electrode of the developing cylinder normal?

If a fault is found after making the above checks, perform cleaning or adjustment as necessary.
If fogging or light density still occurs after making all above checks (1 through 6), replace the developing assembly.



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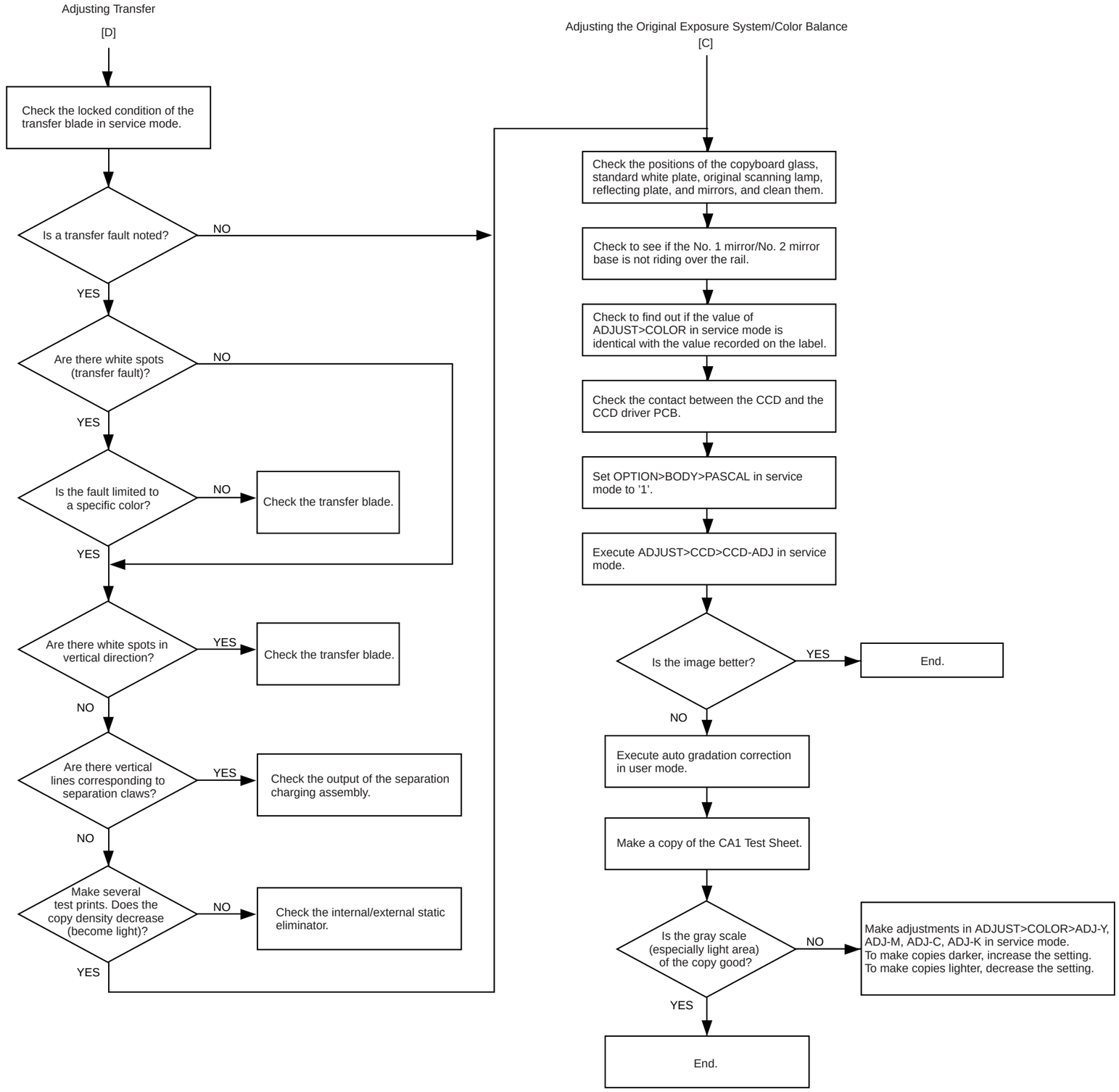
Adjusting Transfer
[D]
Check the locked condition of the transfer blade in service mode.
Is a transfer fault noted?
NO
YES
Are there white spots (transfer fault)?
NO
YES
Is the fault limited to a specific color?
NO
Check the transfer blade.
YES
Are there white spots in vertical direction?
YES
Check the transfer blade.
NO
Are there vertical lines corresponding to separation claws?
YES
Check the output of the separation charging assembly.
NO
Make several test prints. Does the copy density decrease (become light)?
NO
Check the internal/external static eliminator.
YES
Adjusting the Original Exposure System/Color Balance
[C]
Check the positions of the copyboard glass, standard white plate, original scanning lamp, reflecting plate, and mirrors, and clean them.
Check to see if the No. 1 mirror/No. 2 mirror base is not riding over the rail.
Check to find out if the value of ADJUST>COLOR in service mode is identical with the value recorded on the label.
Check the contact between the CCD and the CCD driver PCB.
Set OPTION>BODY>PASCAL in service mode to '1'.
Execute ADJUST>CCD>CCD-ADJ in service mode.
Is the image better?
YES
End.
NO
Execute auto gradation correction in user mode.
Make a copy of the CA1 Test Sheet.
Is the gray scale (especially light area) of the copy good?
NO
Make adjustments in ADJUST>COLOR>ADJ-Y, ADJ-M, ADJ-C, ADJ-K in service mode.
To make copies darker, increase the setting.
To make copies lighter, decrease the setting.
YES
End.

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B. Points to Note for Scheduled Servicing

Optical System

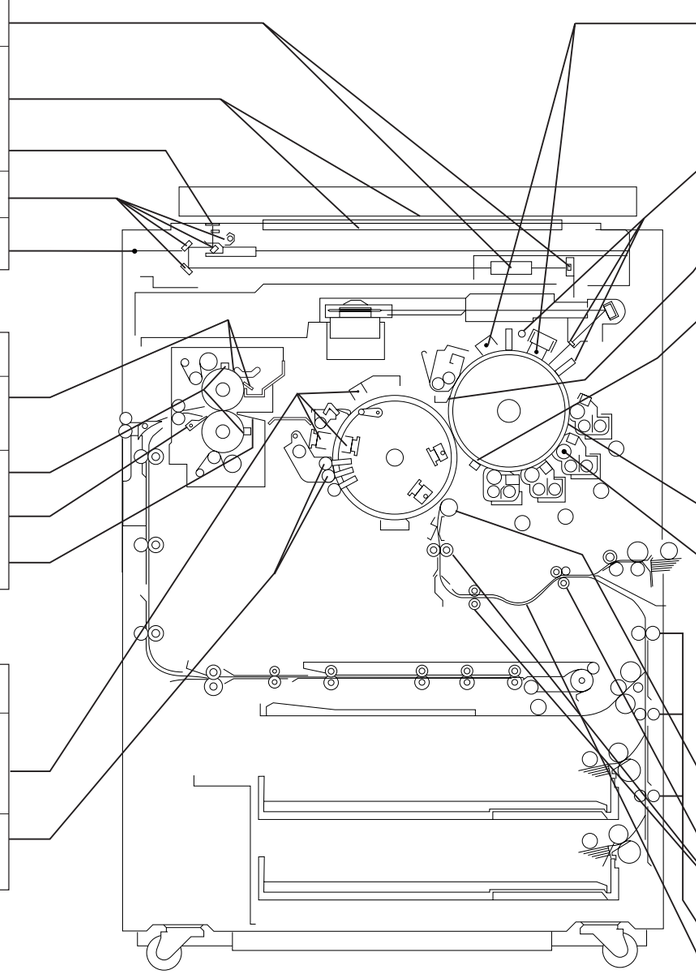
Part	Tool and others	Work and remarks
Lens, CCD	Blower brush	Cleaning (Note 1)
Copyboard sheet, copyboard glass	Alcohol, lint-free paper	Cleaning
Standard white plate		
Reflecting plate, No. 1 through No. 3 mirrors	Blower brush	Cleaning
Scanner rail	Silicone oil	Cleaning; then, lubricating

Fixing System

Part	Tool and others	Work and remarks
Oil applying felt, oil applying blade	Paper rag	Cleaning
Thermistor	Solvent	Cleaning
Separation claw		
Inlet guide		

Transfer Drum System

Part	Tool and others	Work and remarks
Charging wire, shielding plate, block	Lint-free paper, alcohol	Dry wiping; then, cleaning with alcohol. Do NOT use water. (Note 2)
Transfer drum cleaner assembly	Blower brush	Cleaning



Process System

Part	Tool and others	Work and remarks
Charging wire, shielding plate, block	Lint-free paper, alcohol	Dry wiping; then, cleaning with alcohol Do NOT use water. (Note 2)
Pre-exposure lamp, filter, dust-proofing glass, potential sensor	Lint-free paper, blower brush	Cleaning
Pre-cleaning sensor assembly, No. 2 scoop-up sheet assembly	Cotton wad, lint-free paper Blower brush	Use cotton wad to clean the sensor assembly. (Note 3)
Black toner concentration sensor assembly, No. 2 blade assembly	Lint-free paper, blower brush	Remove the buildup of toner; then, dry wipe. Do NOT use solvent. (Note 4)

Developing System

Part	Tool and others	Work and remarks
Developing assembly butting roll, butting block (photosensitive drum)	Solvent	Cleaning at time of replacing the drum.
Developing roll	Solvent	Cleaning at time of replacing the developer.

Pickup/Feeding System

Part	Tool and others	Work and remarks
Attraction roller, attraction roller cleaner pan	Lint-free paper	Cleaning (Remove the unit.)
Registration roller, pre-registration roller 1/2	Alcohol, lint-free paper	Cleaning
Pickup vertical path roller	Alcohol, lint-free paper	Cleaning
Registration path middle guide	Alcohol, lint-free paper	Clean the guide surface

Note 1: Take care not to touch the mirror and lens. Take care so that the CCD will not be soiled with dust.
Note 2: Be sure that the part is completely dry before insertion.
Note 3: After mounting, execute FUNCTION>SENS-ADJ>CLN-OFST. Thereafter, record the values of ADJUST>SENS-ADJ>CLN-TH, CLN-TMP on the service label.
Note 4: After mounting, execute FUNCTION>INSTALL>INIT-D.

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II. STANDARDS AND ADJUSTMENTS

A. Image Adjustment System

1 Image Margin

The image margin of a copy is normal if it is as follows when made in Direct with original detection OFF.
Leading edge: 8/0 ± 1.5 mm (8.0 ± 2.0 mm)
Left/right: 2.0 ± 1.5mm (2.0 ± 1.5 mm)
Trailing edge: 2.5 ± 1.5 mm (4.5 ± 2.0 mm)

The value in parentheses represents double-sided copying.

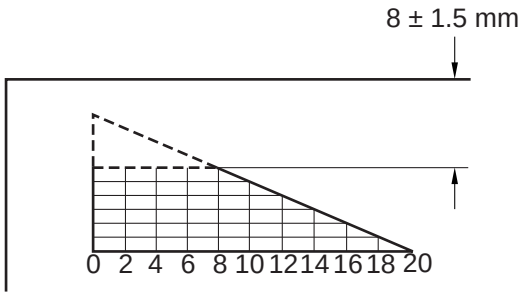

Figure 13-201 Leading Edge Image Margin

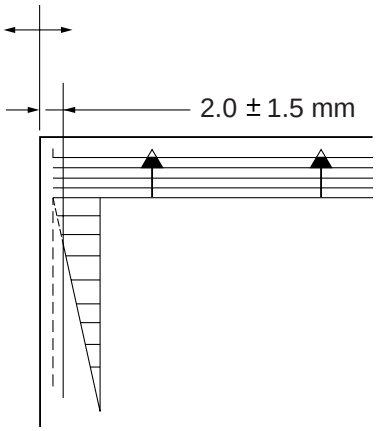

Figure 13-202 Left/Right Image Margin

2 Checking/Adjusting the Image Margin

When making checks and adjustments, observe the following order:

a. Adjusting the left/right registration
b. Adjusting the attraction position (ATT-T)
c. Adjusting the image margin (RG-XA, RG-XB)
d. Adjusting the transfer delay (TR-DELAY)
e. Adjusting the image read start position (ADJ-XY)
f. Adjust the image trailing edge margin (TR-END-A, TR-END-B)

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a. Adjusting the Left/Right Registration

1) Make ten copies each from all cassettes, multifeeder, and duplexing unit, and check the left/right registration A; it is correct if as follows:
   for cassette: 2.0 ± 1.5 mm
   for multifeeder: 2.0 ± 1.5 mm
   for duplexing unit: 2.0 ± 1.5 mm
2) If the registration A is not as indicated, perform the following:

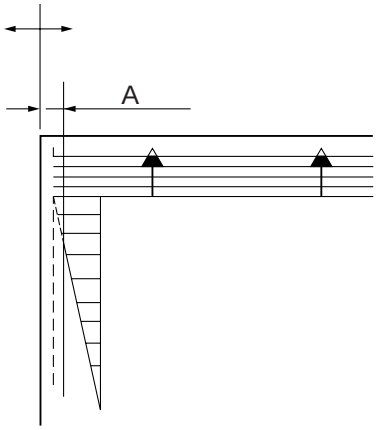

Figure 13-203

▪ For the Cassette

1) Remove the cassette from the cassette holder you want to adjust.
2) Turn the adjusting screw [1] to adjust the position of the horizontal registration adjusting plate so that the horizontal registration on an image is 2.0 ± 1.5 mm. (A full turn causes a shift of about 0.7 mm.)
   · To increase the registration along the front, turn the adjusting screw counterclockwise.
   · To increase the registration along the rear, turn the adjusting screw clockwise.
3) After the adjustment, be sure to perform "registering the paper width basic value."

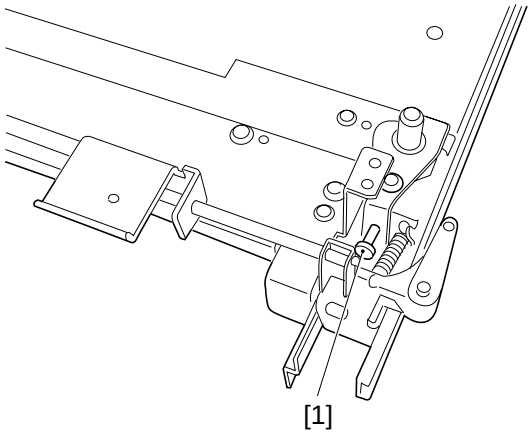

Figure 13-204

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- For the Multifeeder
  Turn the screw [1] to move the position of the tray so that the registration is 2.0 ± 1.5 mm in Direct.

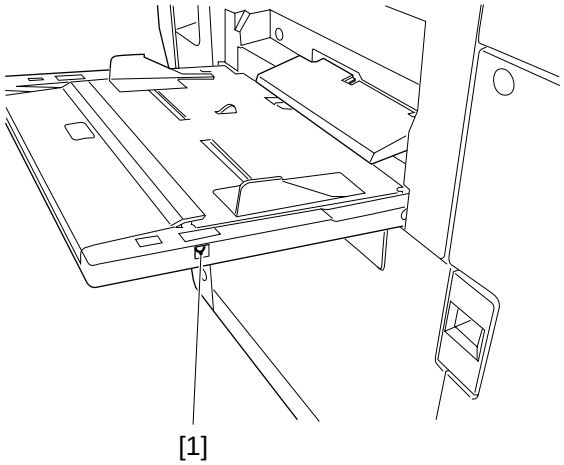

Figure 13-205

- For the Duplexing Unit
  Loosen the screw [1], and move the position of the paper jogging guide so that the registration is 2.0 ± 1.5 mm in Direct.

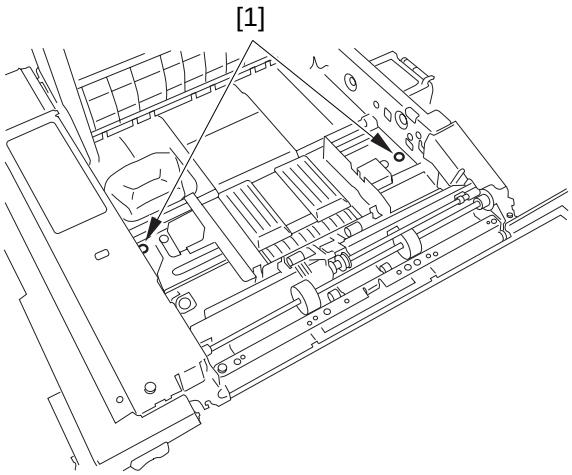

Figure 13-206

b. Adjusting the Attraction Position (ATTRACT)

1) Select A4.
2) Select ADJUST>FEED-ADJ>**ATT-CHK**.
3) Set ATT-CHK to '1' (2-sheet retention; sides B and A), and press OK.
4) Select ATT-ON, and press OK.
   · Copy paper will be picked up, attracted, and stopped.

5) Slide out the transfer frame.
6) Place a ruler and copy paper against the marking (Figure 13-207) etched to the transfer drum ring (front, rear), and measure the position d of the copy paper in relation to the leading edge of the copy paper. Perform this for both sides A and B.

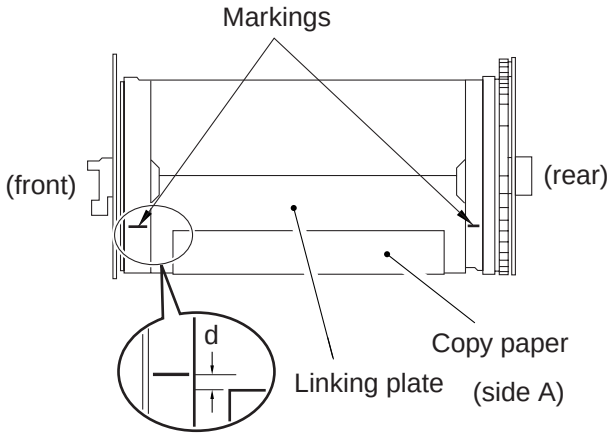

Figure 13-207

7) Make adjustments so that d is 0 ± 0.5 mm in service mode (ADJUST>FEED-ADJ).
   for side A: ATT-T-A
   for side B: ATT-T-B
   · Changing ATT-T-A, ATT-T-B to '1' will shift the point of attraction by about 0.1 mm.
   · A higher setting will delay the start of attraction (in the direction of the black arrow) while a lower setting advances it (in the direction of the white arrow).
8) After adjustment, turn off and then on the power switch.
   · Keep in mind that copies made in normal mode will be black if you forget to turn off and then on the power switch.

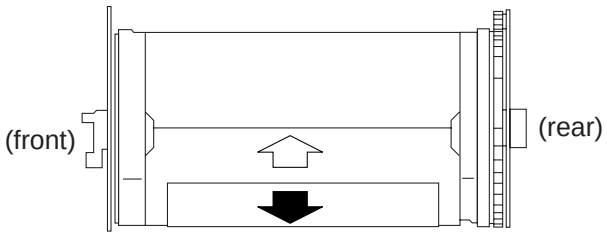

Figure 13-208

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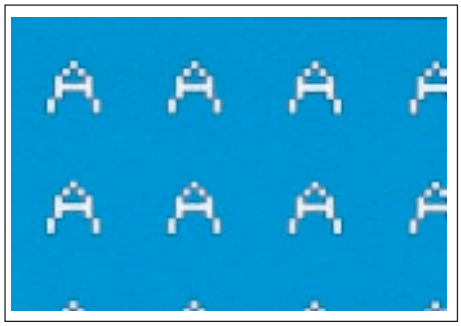
c. Adjusting the Image Leading Edge Margin (RG-XA, RG-XB)

1) Select ADJUST>FEED-ADJ>**RGST-CHK** in service mode, and press OK.
2) Set RGST-CHK to '1' (2-sheet retention; sides B and A), and press OK.
3) Select RGST-ON, and press OK.
   · A total of two prints (one each shown in the figure) will be generated.



Test print on side A

Test print on side B

Figure 13-209

4) Measure the leading edge margin d on the print. Perform this for both sides A and B.
5) Select the following service modes; then, make adjustments by changing the settings so that the leading edge d is 8 ± 0.5 mm.
   for side A: ADJUST>FEED-ADJ>**RG-XA**
   for side B: ADJUST>FEED-ADJ>**RG-XB**
   · Setting it to '1' will shift the leading edge margin by about 0.1 mm.
   · A higher setting increases the leading edge margin while a lower setting decreases it.

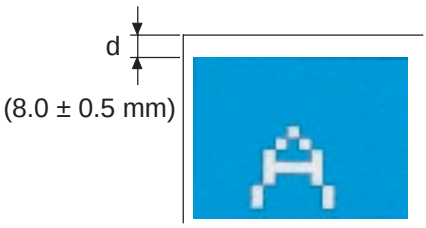


Figure 13-210

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d. Adjusting the Transfer Delay (TR-DELAY)

1) Select FUNCTION>ATTRACT>**TR1-CHK** in service mode.
2) Set TR1-CHK to '1' (2-sheet retention; both sides B and A), and press OK.
3) Select TR1-ON, and press OK.
   · A total of two prints (one each shown in the figure) will be generated.

Test print on side A

Test print on side B

Figure 13-211

4) Measure the transfer delay d on side B on the generated print.
5) Select ADJUST>FEED-ADJ>**TR-DELAY -A or B** in service mode, and make adjustments so that the transfer delay is 3 ± 0.5 mm.
   · Changing the setting to '1' will shift the transfer delay by about 0.1 mm.
   · A higher setting will increase the transfer delay while a lower setting will decrease it.
6) Select FUNCTION>ATTRACT>**TR2-CHK** in service mode, and set '1' (2-sheet retention; both sides B and A), and press OK.
7) Select TR2-ON, and press OK.
8) Check the leading edge margin (8 ± 0.5 mm) on the print.

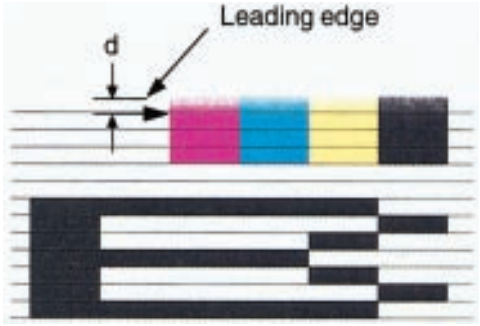

Figure 13-212

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e. Adjusting the Image Read Start Position (ADJ-XY)

1) Place the Test Sheet on the copyboard glass.
2) Select ADJUST>ADJ-XY in service mode.
3) on the ADJ-XY screen, press the Copy Start key.
   · The appropriate copying mode will automatically be selected, and a copy is made with a shift of about 50 mm as shown in the figure.

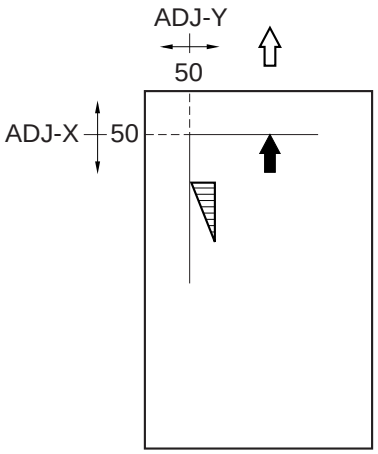

Figure 13-213

4) If part of the image is missing, decrease the setting of **ADJ-X**, **ADJ-Y** in service mode.
5) If part of the image is outside the image area, increase the setting of **ADJ-X**, **ADJ-Y**.
6) Press the Copy Start key once again, and make a check.
7) Press the Reset key.

f. Adjusting the Image Trailing Edge Margin (TR-END-A, B; end of transfer high voltage)

If you have replaced the transfer drum unit in the field, correct the variation in the end of the transfer voltage.

1) Select ADJUST>FEED-ADJ>TR-END-A or B in service mode, and enter '25' (10 mm).
2) Select ADJUST>FEED-ADJ>TR3-ON or -TR4-ON; then, press the OK key.
3) Measure the distance X (mm) between the point at which blurring starts along the trailing edge of the image on the generated test print and the trailing edge of the image.
4) Enter the result of (10 - x)/0.4 as the adjustment value of TR-END-A or -B. (Round the result up to a whole number.)
5) Select ADJUST>FEED-ADJ>TR3-ON or -TR4-ON in service mode once again; then, press the OK key.
6) Check to make sure that the image along the trailing edge of the generated test print is not blurred.
7) Record the value of ADJUST>FEED-ADJ>TR-END-A or -B on the service label.

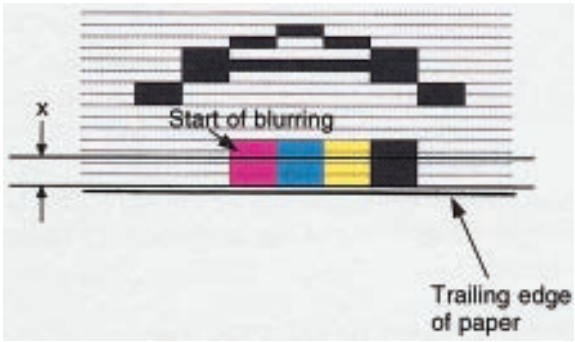

Figure 13-213a

B. Exposure System

1 Routing the Scanner Drive Cable

Route the scanner drive cable as indicated; i.e., [1] through [8]. Then, perform "adjusting the mirror position."

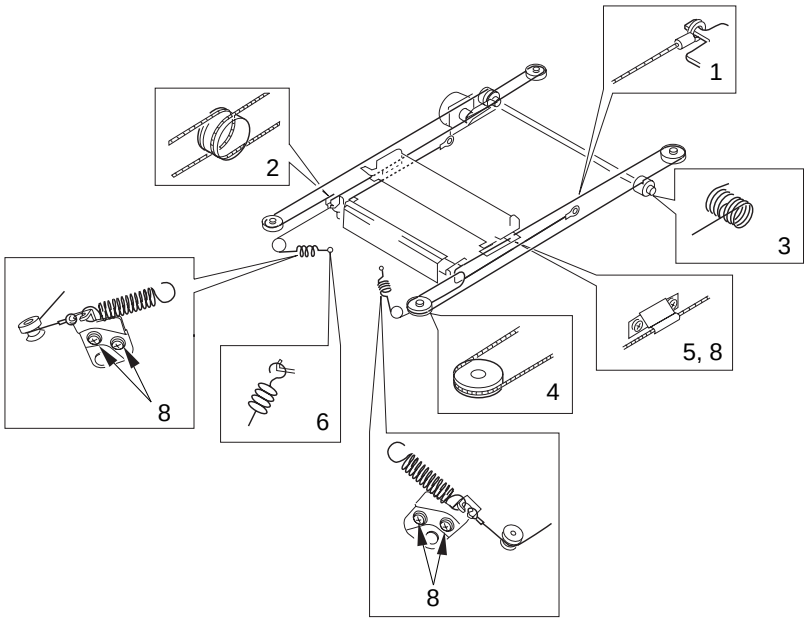

Figure 13-214

2 Adjusting the Mirror Position

Be sure to adjust the position of the mirror when you have routed the scanner drive cable.

1) Extend the arm of the mirror positioning tool (FY9-3040-000) fully.
2) Fit the mirror positioning tool between No. 1 mirror base and No. 2 mirror base.
3) Route the scanner drive cable to the No. 1 mirror mount.

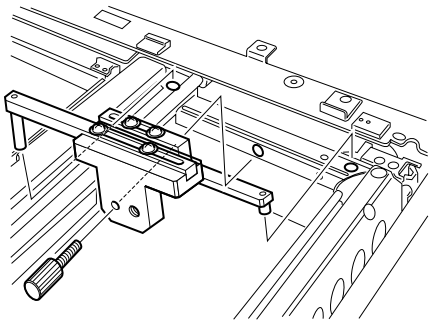

Figure 13-215

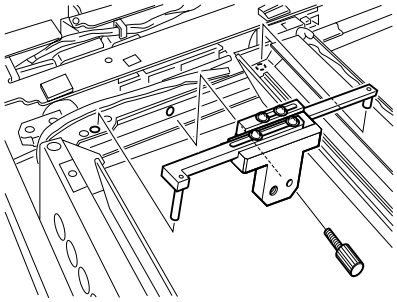

Figure 13-216

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C. Image Formation System

1 Adjusting the Height of Charging Wires

The height (position) of the charging wire of each charging assembly may be adjusted by turning the screw found behind the assembly. A full turn of the screw will shift the charging wire by about 0.7 mm.

You cannot, however, change the height of the wire of the internal static eliminator or the post-cleaning charging assembly.

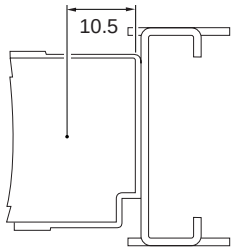
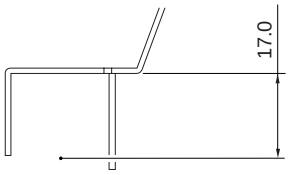
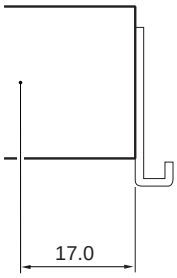
Charging assembly	Height of charging wire (mm)	Range
Primary charging assembly		4 mm (approx.)
Separation charging assembly		4 mm (approx.)
External charging assembly		4 mm (approx.)

Table 13-217

2 Points to Note about the Photosensitive Drum

a. The photosensitive drum is vulnerable to strong light, and exposure to strong light for an appreciable period of time will lead to white spots or black bands on copies. Whenever you have removed the photosensitive drum from the copier, be sure to wrap the light-blocking sheet (or five to six sheets of fresh copy paper) around it, and keep it in a dark place.

b. If you are installing a new photosensitive drum, be sure to perform the following:
   1) Install the new photosensitive drum.
   2) Mount the primary charging assembly, pre-cleaning charging assembly, photosensitive drum cleaner assembly, and developing assemblies.
   3) Coat the No. 2 blade of the black toner concentration sensor evenly with drum cleaner lubricant (TKN-0480).
   4) Coat the blade of the photosensitive drum cleaner assembly with drum cleaner lubricant (TKN-0480).
   5) Dry wipe the window of the black toner concentration sensor, and mount it.

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6) Dry wipe the window of the pre-cleaning sensor, and mount it.
7) Turn on the power switch, and keep the copier in standby state.
8) Select FUNCTION>INSTALL> **STIR-4** in service mode, and execute it.
9) Select FUNCTION>SENS-ADJ> **CLN-OFST**, and execute it.
10) Record the settings of ADJUST> SENS-ADJ>**CLN-TH**, **CLN-TMP** on the service label attached behind the front right cover.
11) Select FUNCTION>INSTALL> **INIT-D** in service mode, and execute it.

c. If the surface of the photosensitive drum is soiled, wipe it with a flannel cloth coated with toner. (Do NOT use paper, lint-free or otherwise.)
Do not use solvent when cleaning it. Do not touch its surface.

3 Adjusting the Position of the Photosensitive Drum Fixing Shaft

Slide the photosensitive drum frame unit about 5 cm out of the copier, and then slide it back in. If the movement is not smooth, adjust the position of the photosensitive drum fixing shaft using the drum shaft positioning tool (FY9-3045-000).

This adjustment, however, need not be made if the images are free of color displacement, blurring, and faults at intervals and, moreover, the discrepancy between the photosensitive drum fixing shaft and the hole of the photosensitive drum flange is about 1 mm.

1) Slide out the photosensitive drum unit from the copier.
2) Remove the six screws [1], and detach the photosensitive drum butting blocks [2] (front, back); then, detach the photosensitive drum [3] from the photosensitive drum frame unit [4].
3) Slide the photosensitive drum frame unit into the copier, and secure it in place with three screws.
4) Secure the drum motor assembly [5] to the copier temporarily with seven screws [6].

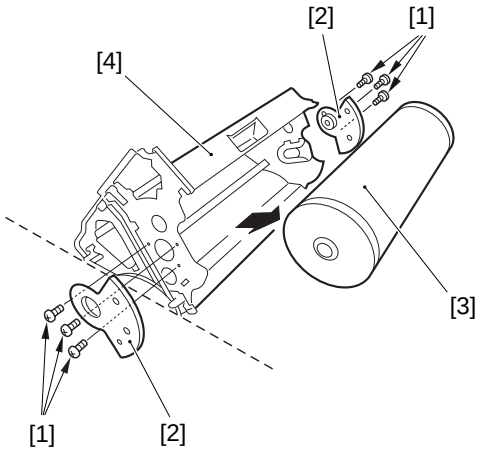

Figure 13-218

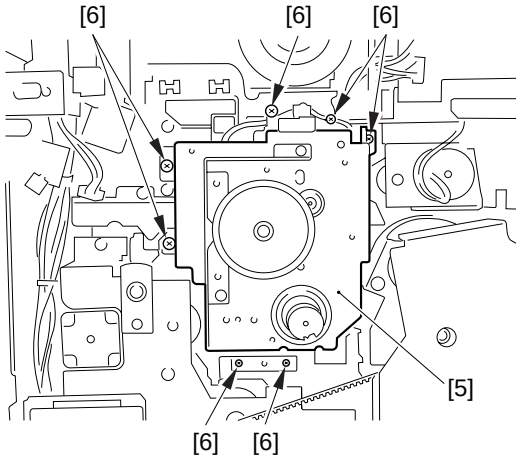

Figure 13-219

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5) Secure the drum shaft positioning tool [7] in place to the photosensitive drum frame unit with the two screws [8] removed in step 2).
6) Secure the drum motor assembly in place with seven screws.
7) Detach the drum shaft positioning tool, and slide out the photosensitive drum unit from the copier; then, mount the unit and parts removed in step 1).

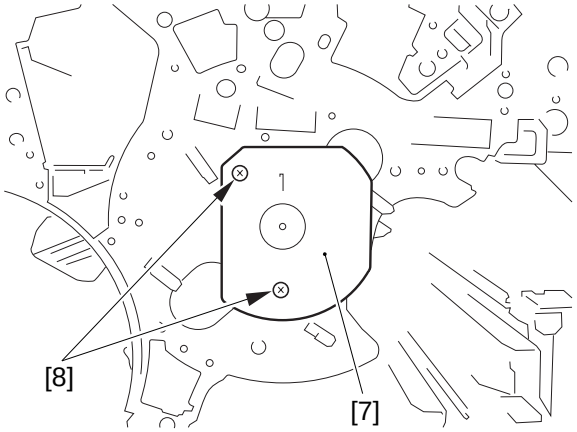

Figure 13-220

3 Use of Grease

Do NOT use grease (conducting or otherwise) to the slip ring for the drum heater.

4 Adjusting the Developing Assembly S-B Gap

If you have replaced the developing blade, adjust the S-B gap of each sleeve using the S-B gap gauge (FY9-3044-000).

Developer	S-B gap
Yellow	0.62 mm
Cyan	0.74 mm
Magenta	0.74 mm
Black	0.48 mm

Table 13-201

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5 Replacing the Developer

1) Open the hopper unit fully.
2) An appreciable amount of developer will fall out in the next step. Keep a plastic bag [1] as shown.
3) Detach the cap [2] from the discharge opening found at the front bottom of the developing assembly whose developer you want to replace.
4) Select FUNCTION>**INSTALL** in service mode.
5) While keeping the plastic bag against the discharge opening, press **RECV-M/C/Y/K**, as appropriate, in service mode.
   · When the developer has stopped pouring, press the Stop key to stop the operation.
6) Fit the cap back on the discharge opening.
7) Remove the screw, and detach the developing assembly; then, detach the cap from the discharge opening.
   In the case of the black developing assembly, disconnect the connector also.
8) While tilting the developing assembly, turn the gear by hand to discharge all remaining developer.
   At this time, tilt the developing assembly farther down while turning the gear so that no toner will remain when it is finally held upright.
9) Fit the cap to the discharge opening.
10) Mount the developing assembly to the copier.
11) At the end of the wait period, select FUNCTION>**INSTALL** in service mode.
12) Press SPLY-M/C/Y/K, as appropriate.
13) See that the developing assembly is locked in place, and the screw inside it rotates (about 10 sec).

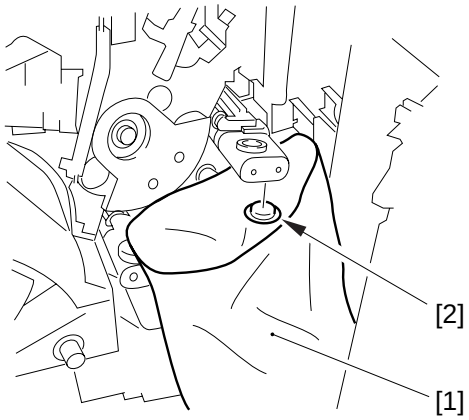

Figure 13-221

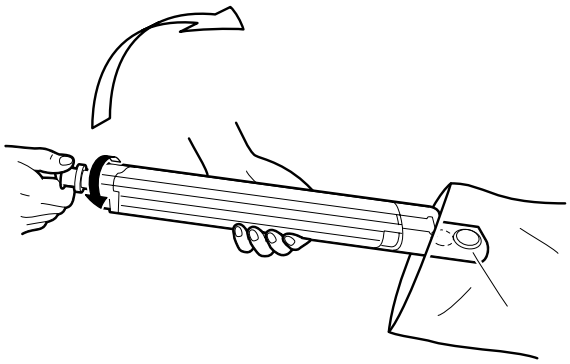

Figure 13-222

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14) Fit the developer supply funnel that comes with the copier to the developing assembly upright.

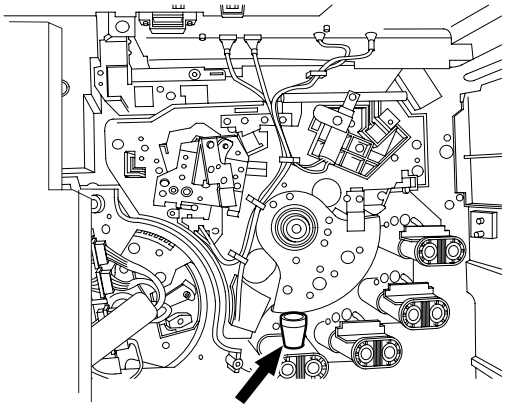

Figure 13-223

15) Put the developer into the developing assembly.
    - Turn the developer container slowly while tilting it to facilitate the work.
16) When done, press the Stop key to stop the operation.
17) Execute **STIR-Y/M/C/K** in service mode (about 10 min).
18) Execute **INIT-Y/M/C/K** in service mode (about 10 min).
19) Select ADJUST>**DENS** in service mode.
20) Record the data of the DENS screen on the service label.

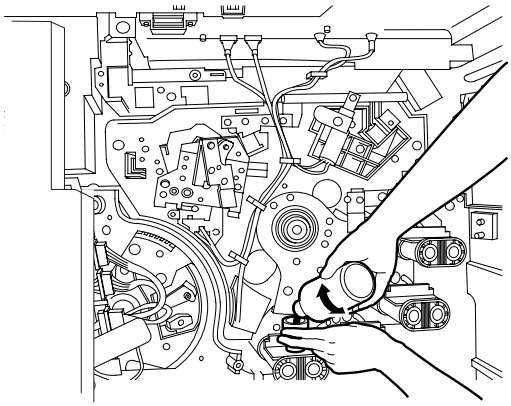

Figure 13-224

6 Points to Note about the Pre-Cleaning Sensor

If you have removed or replaced the pre-cleaning sensor assembly, perform the following:

1) Dry wipe the window of the pre-cleaning sensor, and mount it.
2) Turn on the power switch, and keep the copier in standby state.
3) Select and execute FUNCTION>SENS-ADJ>**CLN-OFST** in service mode.
4) Record the settings of ADJUST>SENS-ADJ>**CLN-TH**, **CLN-TMP** in service mode to the service label behind the front right door.

7 Points to Note about the Black Toner Concentration Sensor

If you have dry wiped the window of the black toner concentration sensor, select and execute FUNCTION>INSTALL>**INIT-D** after mounting it.

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D. Pickup/Feeding System

1	Orientation of the Cassette Pickup Roller

When mounting the pickup roller [1] to the pickup assembly, be sure that the round marking [2] on the rubber portion is at the copier's front. The pickup roller is identified by color as follows:

- for the front, use the gold-colored roller.
- for the rear, use the silver-colored roller.

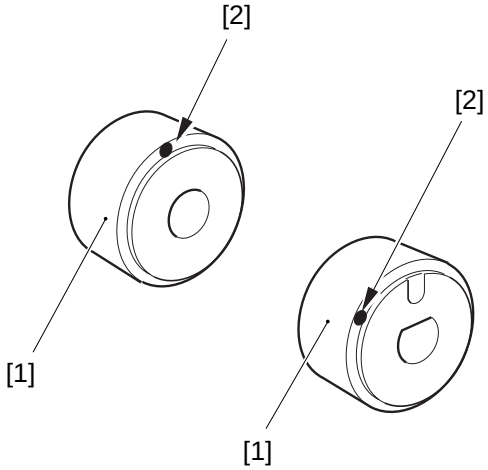

Figure 13-225

2	Orientation of the Cassette Feed Roller

When mounting the feed roller [1] to the pickup assembly, be sure that the gear [2] of the feed roller is at the copier's front.

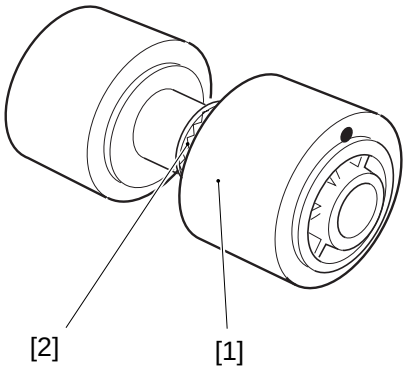

Figure 13-226

3	Orientation of the Cassette Separation Roller

When mounting the separation roller [1] to the pickup assembly, be sure that the round marking [2] is at the copier's front.

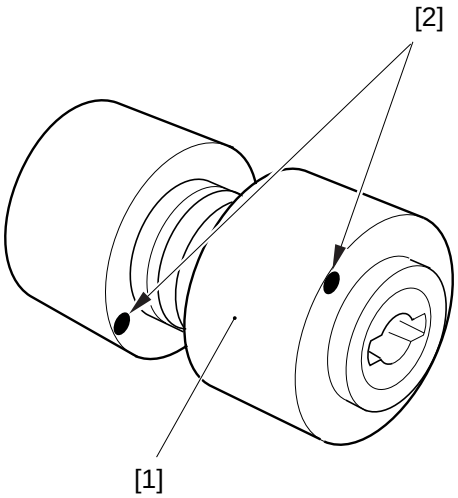

Figure 13-227

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4	Adjusting the Pressure of the Separation Roller

If double feeding or pickup failure occurs during pickup, adjust the position of the pressure spring of the separation roller.

a. If double feeding occurs, move the spring in the direction of arrow A.
b. If pickup failure occurs, move the spring in the direction of arrow B.

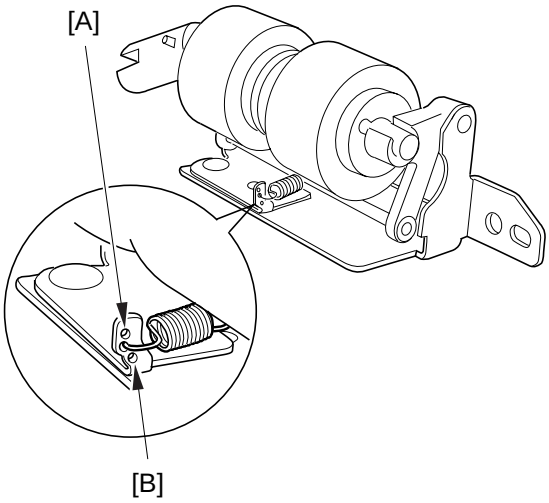

Figure 13-228

5	Orientation of the Duplexing Feed Roller and the Duplexing Separation Roller

When mounting the feed roller [1], be sure that the round marking [2] is at the copier's front.

When mounting the separation roller [3], be sure that the round marking [4] is at the copier's rear.

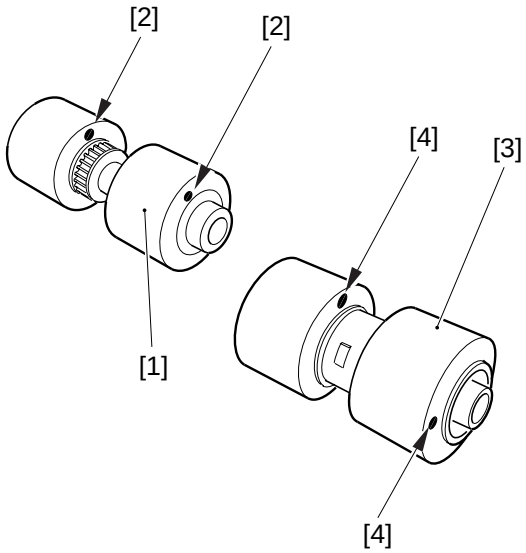

Figure 13-229

6	Orientation of the Manual Pickup, Feed, and Separation Rollers

When mounting each roller, be sure that the round marking [1], [2], [3] is at the copier's rear.

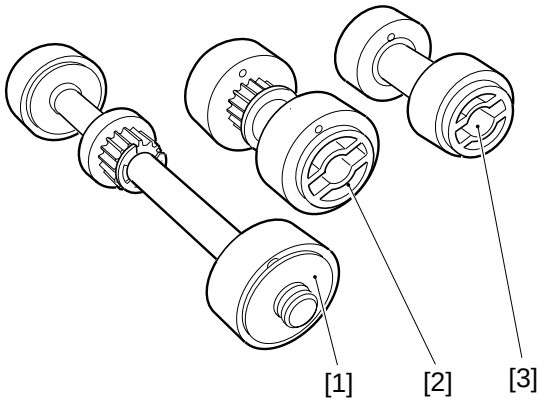

Figure 13-230

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7 Attaching the Timing Belt for the Multifeeder Assembly

Keep the rack plate [1] of the multifeeder in closed state.

Move the slide volume [2] in the direction of the arrow, and attach the timing belt [3] to the pulley.

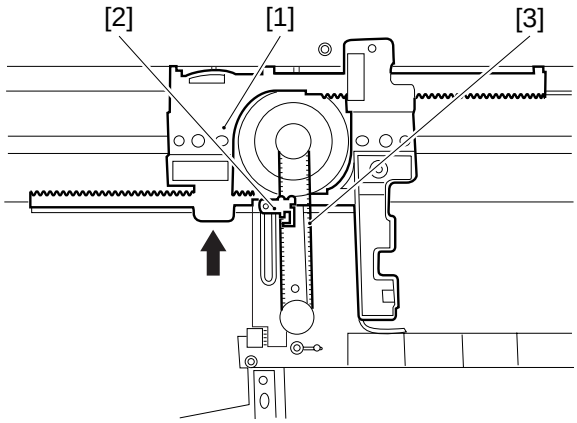

Figure 13-231

8 Adjusting the Position of the Duplexing Unit Paper Jogging Guide Sensor

1) Select A4R or LTRR, and perform copying on the first side of a double-sided copy.
2) Slide out the duplexing unit.
3) Measure the distance L of the paper jogging guide plate [1].
   A4R: L = 210 ± 0.3 mm
   LTRR: L = 216 ± 0.3 mm
4) If the distance is not as indicted, adjust the position of the paper jogging guide sensor.

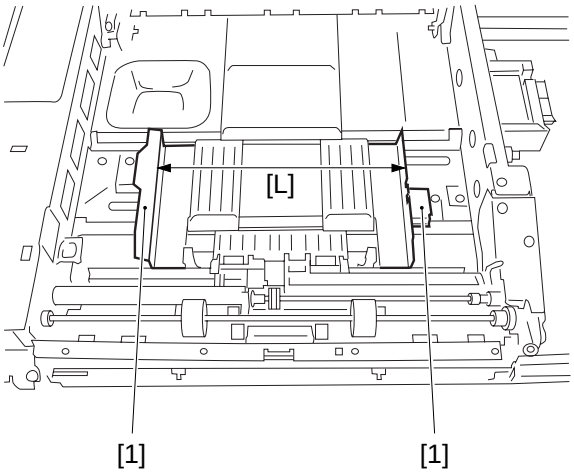

Figure 13-232

9 Position of the Duplexing Unit Stopper Plate Solenoid

1) Keep the steel core [1] of the solenoid drawn to the copier.
2) Rotate the shutter [2], and keep the distance as indicated, i.e., L1 is 1.0 ± 0.2 mm. Then, secure the stopper plate solenoid.

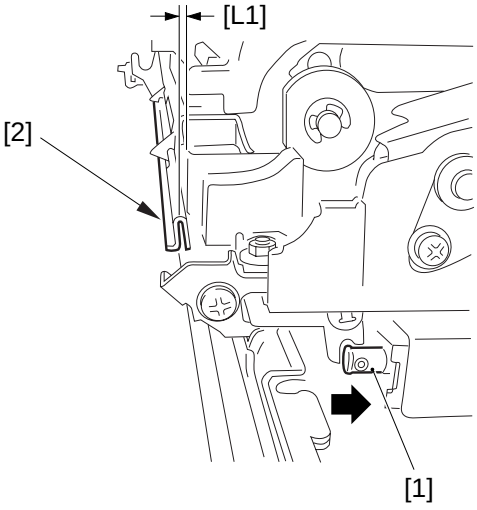

Figure 13-233

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10 Position of the Duplexing Feed Roller Solenoid

While the steel core of the solenoid is drawn to the copier, mount the duplexing feed solenoid so that the distance L2 between the top edge of the feed roller and the holding tray is 49 ± 0.5 mm.

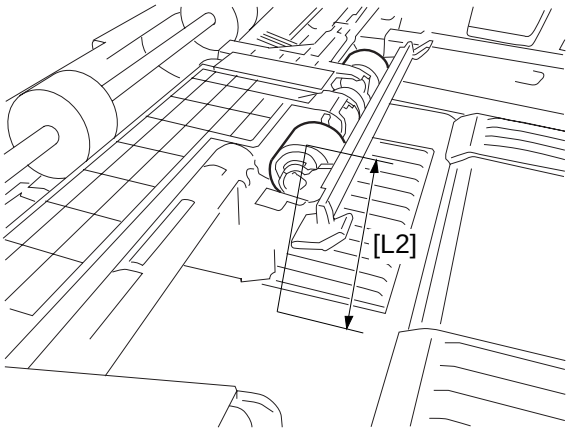

Figure 13-234

11 Replacing the Transfer Drum Sheet

Caution:

The transfer drum frame is equipped with a slip-stop mechanism; as such, keep the following in mind:

- Do not turn the transfer drum clockwise with your fingers inside the opening in the transfer drum while the transfer drum is on the transfer drum frame.
- When the transfer drum is off the frame, it will tend to rotate in clockwise direction. (If the transfer drum is rotated clockwise, the transfer brush and the attraction brush will become damaged.

a. Removing the Transfer Drum Sheet

1) Open the front cover; then, slide out the hopper, and open it 180°.
2) Slide out the transfer drum frame.
3) Detach the transfer drum from the transfer drum frame.
4) Remove the four TP screws [1], and remove the transfer drum side scraper [2].

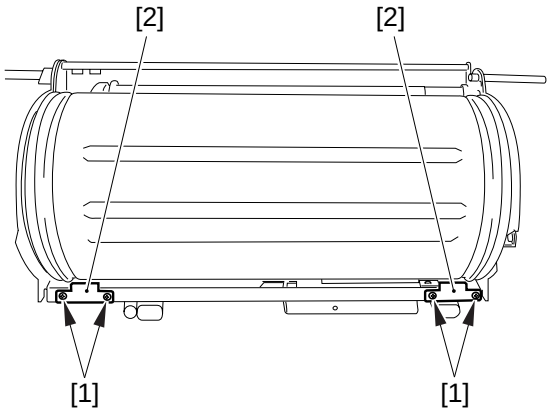

Figure 13-235

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5) Peel off the trailing edge of the transfer drum sheet and keep it off the transfer drum.

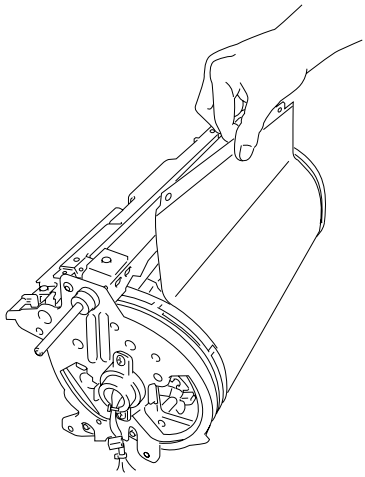

Figure 13-236

6) Peel off the leading edge of the transfer drum sheet.

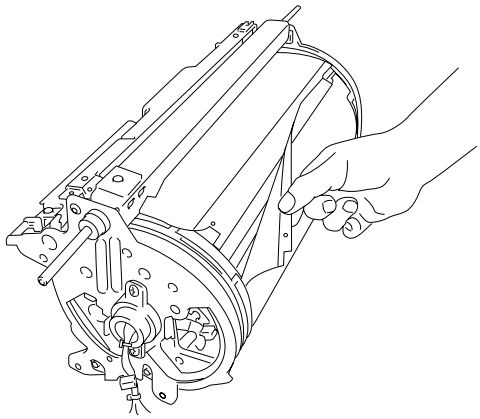

Figure 13-237

7) Peel off the transfer drum sheet while holding it on its leading edge.

Caution:
Remove all traces of adhesive from the transfer drum ring.

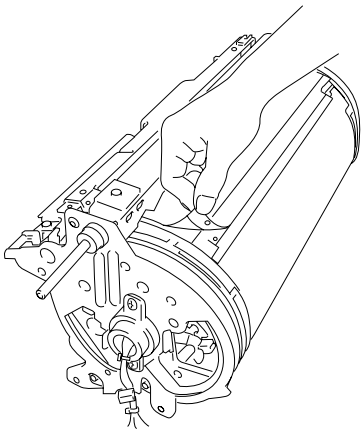

Figure 13-238

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b. Attaching the Transfer Drum Sheet

Caution:
Do not touch the area of the transfer drum sheet where copy paper will come into contact.

1) Clean the area of the transfer drum ring for adhesive tape.
2) Turn the ring so that the ring connecting plate [1] is as shown.
3) Peel off the adhesive tape from the leading edge (side with holes) of the transfer drum sheet.
4) Match the holes along the leading edge of the transfer drum sheet with the holes in the ring connecting plate.

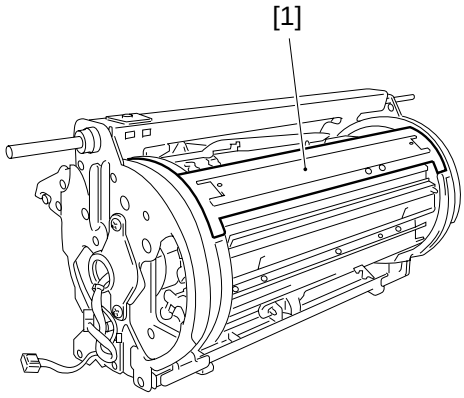

Figure 13-239

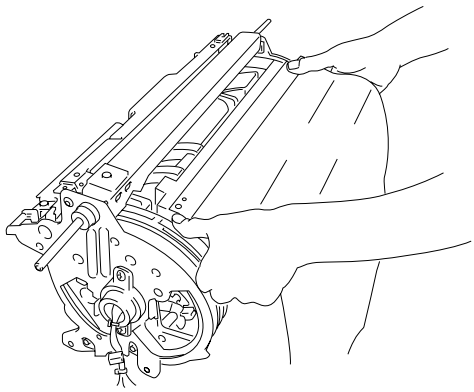

Figure 13-240

5) Peel off the adhesive tape of the transfer drum sheet.
6) Holding the trailing edge of the transfer drum sheet with your right hand, let it hang on its own weight. Then, turn the ring on the front of the transfer drum with your left hand to attach the transfer drum sheet.

Caution:
Attach the transfer drum sheet so that the gap between the leading edge and the trailing edge is 0 ± 1.5 mm.

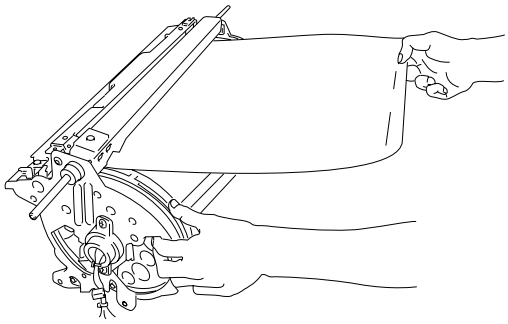

Figure 13-241

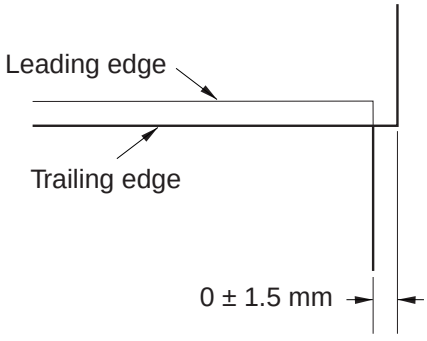

Figure 13-242

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7) While keeping the leading edge of the transfer drum sheet against the transfer drum and stroking it as if to push the trailing edge over the leading edge, attach the transfer drum sheet from center to both sides.

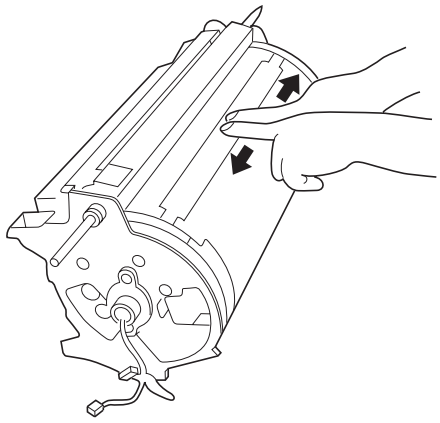

Figure 13-243

Caution:
Be sure that there is no warping or slacking at the center of the transfer drum sheet. Warping, if any, will cause the transfer drum sheet to come into contact with the photosensitive drum, leading to caking of toner on the photosensitive drum and, as a result, photosensitive drum cleaning faults.

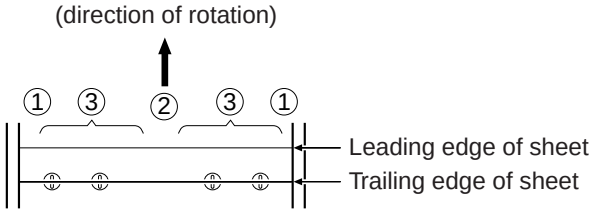

Figure 13-244 Correct Way of Attaching the Transfer Drum Sheet

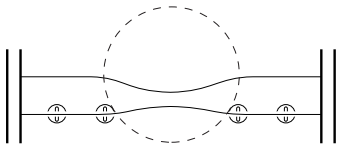

Figure 13-245 Incorrect Way of Attaching the Sheet

8) Smooth over the adhesive tape of the transfer drum sheet so that the sheet will be in firm contact with the transfer drum.
9) Check the transfer drum sheet for warping and slacking.
10) Slide the transfer drum frame into the copier.

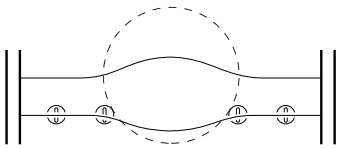

Figure 13-246 Incorrect Way of Attaching the Sheet

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11 When Replacing the Transfer Drum Assembly

If you have replaced the transfer drum, perform the following in service mode (ADJUST>**FEED-ADJ**; p. 13-7):

1. Adjusting the attraction position (ATT-T-A, ATT-T-B)
2. Adjusting the image leading edge margin (RG-XA, RG-XB, RG-Y)
3. Transfer delay (TR-DELAY-A, TR-DELAY-B)

12 Position of the Paper Deflecting Plate Solenoid (SL10; delivery assembly)

Loosen the adjusting screw [4] to make adjustments while the paper deflecting plate [2] is butting against the delivery upper guide [3] when the solenoid [1] is on (viewing the delivery assembly from the side at the rear).

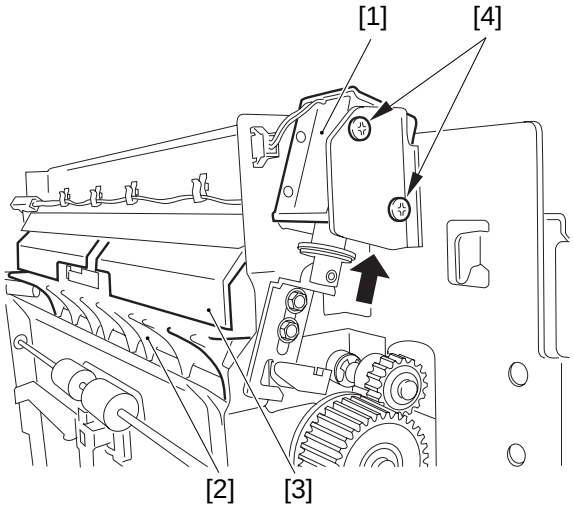

Figure 13-247

13 Applying Lubricant to the Transfer drum Cleaner

1) Use a specific lubricant (e.g., FY9-6006).
2) Put a drop of lubricant (one drop each) at points indicated (A).
3) Turn the gear several times by hand so that the lubricant spreads inside the bushing.
4) Put another drop (one each) once again, and repeat step 3.
5) When all amounts of lubricant have spread to the inside of the bushing, wipe the excess lubricant with lint-free paper (indicated by dashed lines).

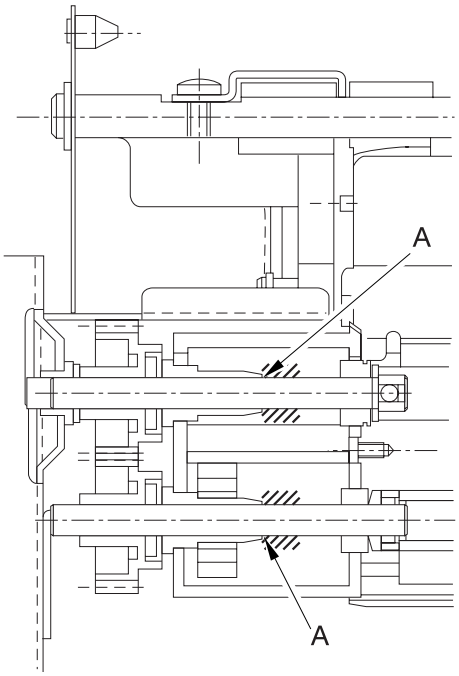

Figure 13-247a

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E. Fixing System

1 When Replacing the Fixing Heater

Do not touch the surface of the heater.

Reference:

You need not orient the copier's fixing heater (front, rear) in a specific orientation.

2 Adjusting the Nip (nut for locking the fixing assembly)

a. Measuring the Nip Width

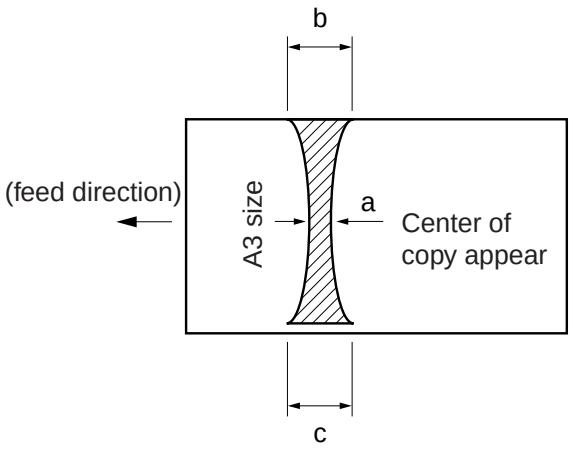
If you are taking measurements while the roller is not hot, let the copier complete its standby period, wait 15 min, and make 20 copies.

b. Taking Measurements

1) Start service mode.
2) Select FUNCTION>FIXING>**NIP-CHK**, and press OK.
   The nip width is correct if as indicated; otherwise, use the adjusting nut [1] to make adjustments.

Caution:

b and c are points 10 to 15 mm from paper ends.



Dimension	Measurements*
a	7.3 ±0.3 mm
|b-c|	0.5 mm or less
b-a c-a	0.5 mm or less

* Be sure both upper and lower rollers are sufficiently heated.

figure 13-248

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3	Orientation of the Cleaning Belt

Mount the fixing cleaning belt as shown .

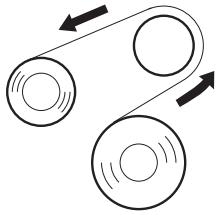

Figure 13-249 Fixing Upper Cleaning Belt (rear view)

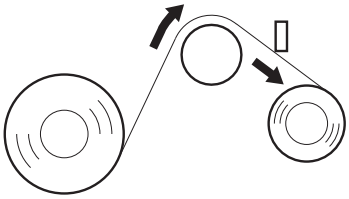

Figure 13-250 Fixing Lower Cleaning Belt (rear view)

4	Orientation of the fixing Upper/ Lower Solenoid

Adjust the position so that the stroke [A] is 5 ± 0.2 mm for the fixing paper solenoid and 4 ± 0.2 mm for the lower fixing solenoid.

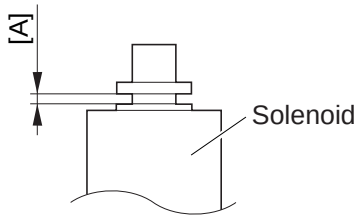

Figure 13-251

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5 Points to Note When Replacing the Oil Coating Assembly

Caution:

1. The oil coating unit is adjusted and assembled at the factory, and must not be removed. Do not touch the screws [1] shown in the figure.
2. If you have replaced the oil felt, be sure to execute COPIER>OPTION> FIXING>**PUMP-ON** in service mode to impregnate it with fixing oil. Be sure to press the Stop key in about 10 min.

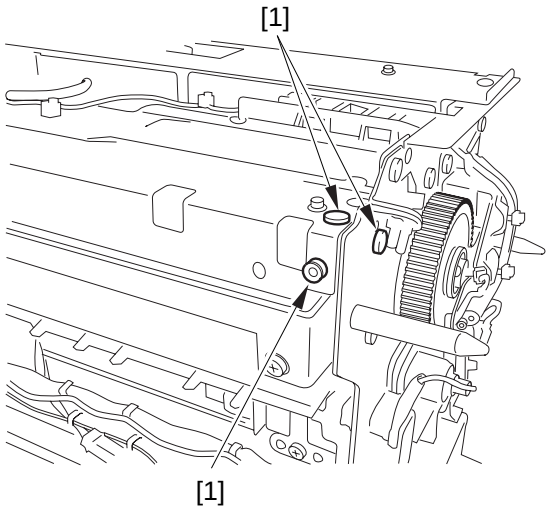

Figure 13-252 (rear)

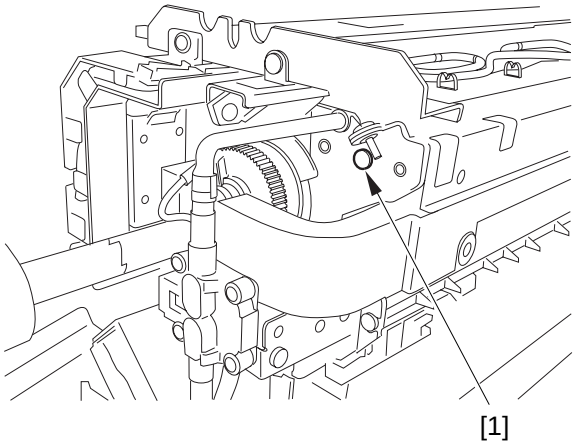

Figure 13-353 (front)

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F. Externals/Controls

1 Handling the Flywheel

The copier's flywheel [1] weighs 8 kg in total. Take extra care not to drop it during work. When holding it, be sure to support it on its left and right as shown.

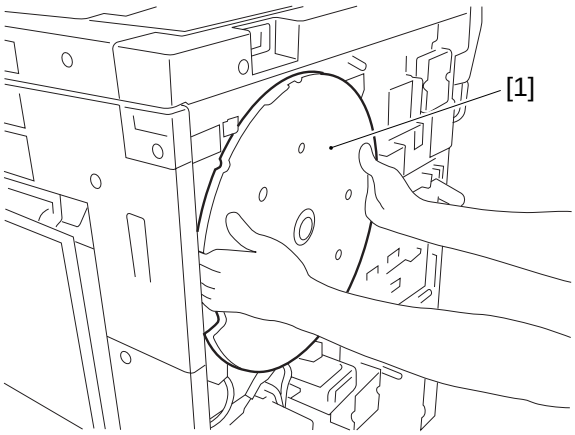

Figure 13-254

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G. Paper Deck

1 Mounting the Paper Level Indicator

If you have moved the paper level indicator drive belt behind the front cover or the deck lifter when removing the front cover, perform the following to correct its position:

1) Move down the deck lifter to the lower limit.
2) Move the drive belt [1] behind the front cover by hand lightly in the direction of the arrow until it stops (so that the white area in the window [2] increases).
3) Mount the front cover [3].
   If you operate the deck without matching the paper level indicator and the deck lifter, you can damage the drive system of the paper level indicator. Exercise care.

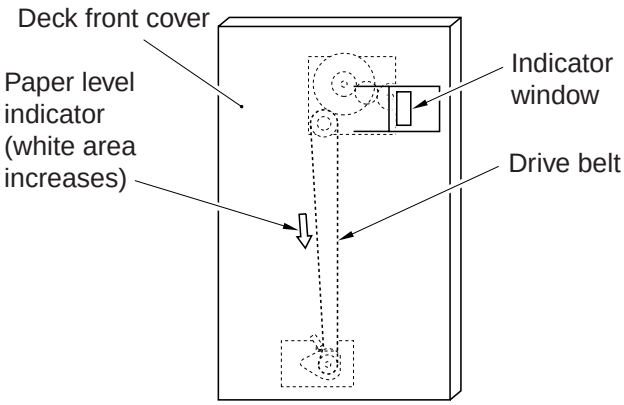

Figure 13-255

2 Adjusting the Left/Right Registration of the Deck

If the left/right registration is 0 ± 2.0 mm, adjust the position of the latch plate [1] with two screws [2]. (At this time, use the graduation [3] on the latch plate as a guide.)

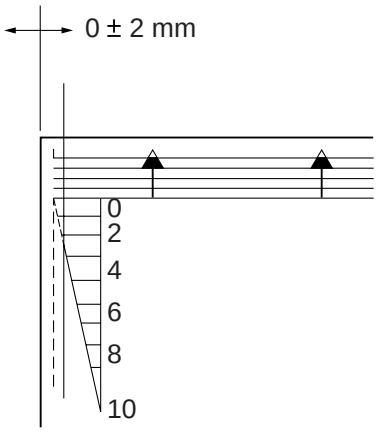

Figure 13-256

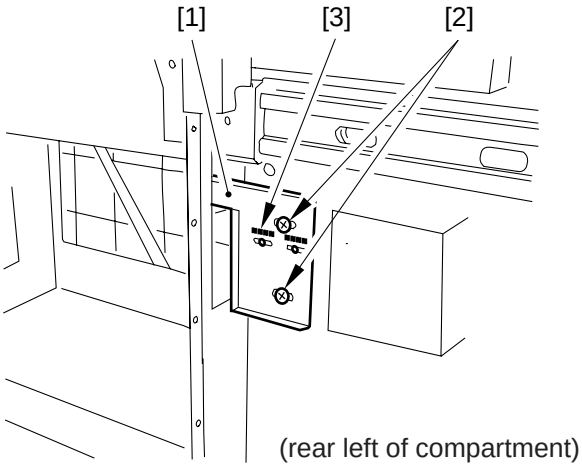

Figure 13-257

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3 Adjusting the Position of the Roll

Make adjustments using the four mounting screws [4] of the roll support plate [3] so that the roll [1] is about 3 mm from the floor [2] when the compartment is fully slid out.

(At this time, use the graduation [5] on the front side plate as a reference.)

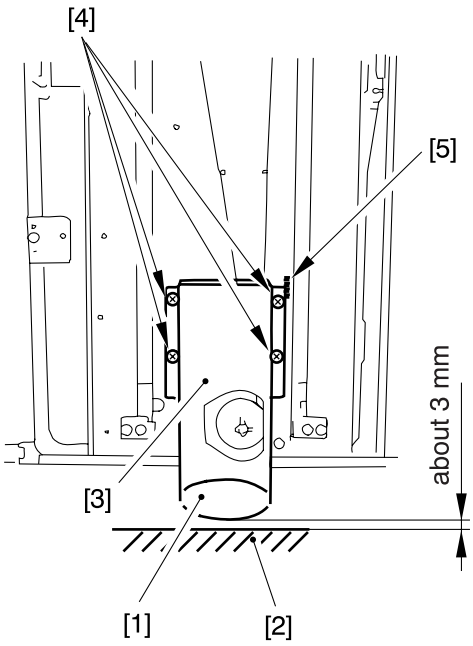

Figure 13-258

4 Routing the Lifter Cable

1) Fix the lifter drive shaft and the lifter in place with a hex wrench [1] and a long screwdriver [2]
2) Fix the cable fixing plate [3] in place to the lifter with two screws.
3) Hook the lifter cable on the pulley [4].
4) Hook the ball of the lifter cable on the pulley [5] of the lifter drive shaft, and wind the cable along the groove about 1.5 turns. At this time, be sure that the lifter cable is taut until the long screwdriver used to keep it in position is lightly lifted.
5) In this condition, secure the pulley in place to the lifter drive shaft with two set screws [6].
6) Secure all pulleys to the lifter drive shaft; then, measure the distance from the base plate of the compartment to the top surface of the lifter to make sure that the lifter is level.

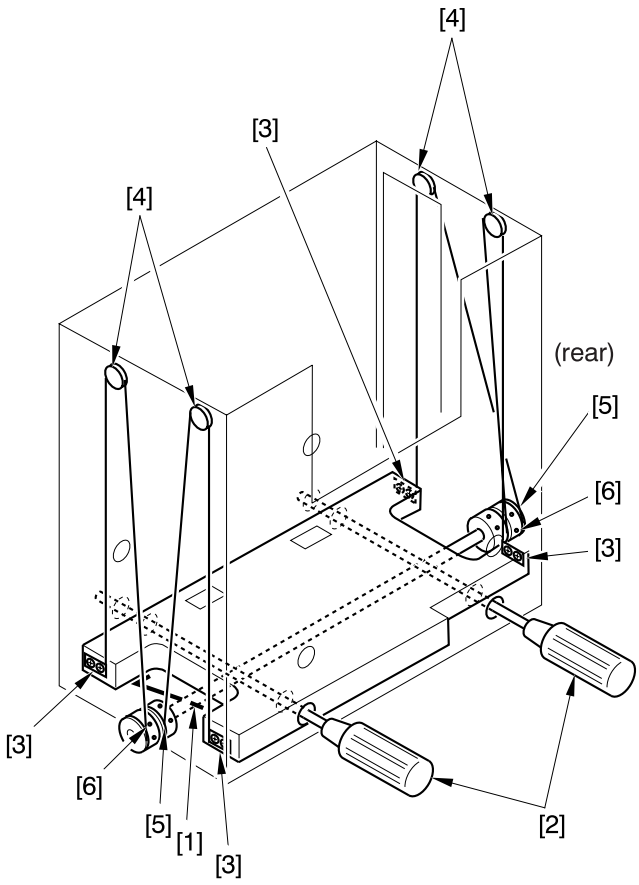

Figure 13-259

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5 Orientation of the Deck Pickup Roller

When mounting the deck pickup roller [1] at the front, be sure that the marking [2] on the collar (silver-colored) is at the copier's front and the marking [3] on the side of the roller is at the copier's rear.

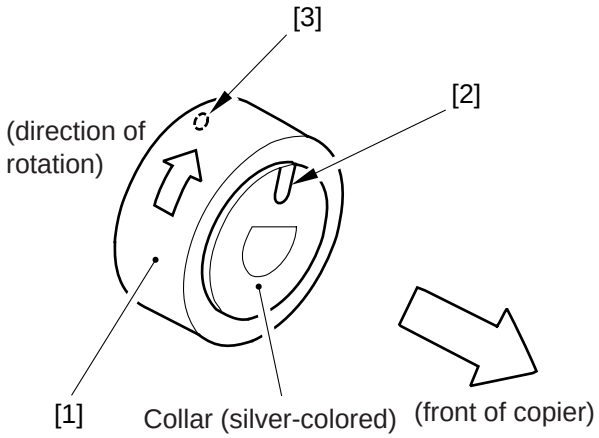

Figure 13-260

When mounting the deck pickup roller [4], be sure that the marking [5] on its inside and the marking [6] on its collar (gold-colored) are at the copier's rear.

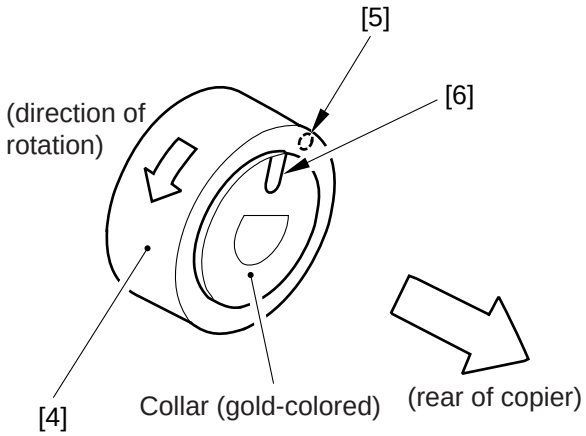

Figure 13-261

6 Orientation of the Deck Pickup/ Feed Roller

When mounting the deck pickup/feed roller [1], be sure that the belt pulley [2] is at the copier's front.

When mounting the pickup/feed roller rubber to the pickup/feed roller shaft, be sure that the marking [3] is at the copier's rear.

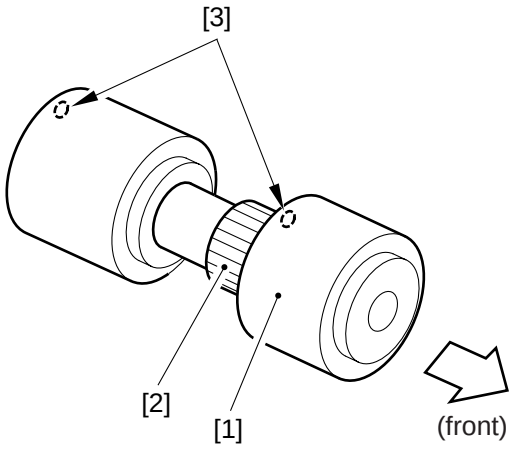

Figure 13-262

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7 Adjusting the Deck Separation Roller Pressure

If double feeding or pickup failure occurs when pickup is from the side paper deck, adjust the position of pressure spring of the deck separation roller.

- If pickup failure occurs, move the position of the spring in the direction of arrow A.
- If double feeding occurs, move the position of the spring in the direction of arrow B.

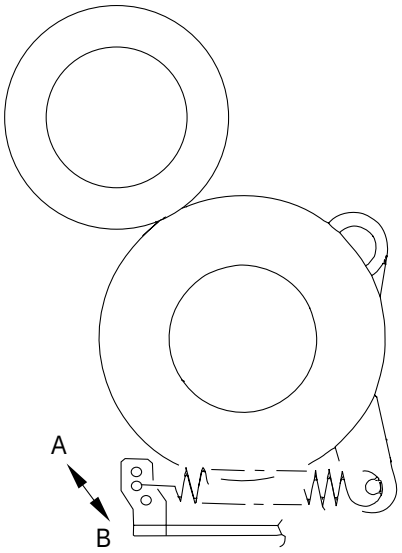

Figure 13-263

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H. Electrical System

The copier's service mode is used to adjust its electrical mechanisms. Most of them are adjusted at the factory, and require high precision. As a rule, do not make those adjustments that are not discussed herein.

1 When Replacing the CPU PCB

1) Check the data of ADJUST and OPTION in service mode before replacement, and take notes. Or, back up the data using the downloading tool.
2) Remove the CPU PCB.
3) Mount the new CPU PCB.
4) Remove the three flash memories and the memory PCB from the old CPU PCB, and mount them to the new CPU PCB.
5) Turn on the power switch.
6) Select FUNCTION>CLEAR>**DC-CON** and **R-CON** in service mode, and set them to '1'.
7) Enter the data you took notes of in step 1).
8) Execute FUNCTION>CCD>**CCD-ADJ** in service mode.

2 When Replacing the Flash Memory on the CPU PCB

1) Check the data of ADJUST and OPTION in service mode before replacement, and take notes. Or, back up the data using the downloading tool.
2) Detach the old flash memory from the CPU PCB.
3) Mount the new flash memory to the CPU PCB.
4) Turn on the power switch.
5) Select FUNCTION>CLEAR>DC-CON and R-CON, and set them to '1'.
6) Enter the data you took notes of in step 1).
7) Execute FUNCTION>CCD>**CCD-ADJ** in service mode.

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3 Adjusting the Laser Power

If you replaced the laser scanner unit, laser driver PCB, or laser controller PCB, enter the values attached to the PCB in service mode (ADJUST>LASER). Attach the label behind the right front cover for future reference.

If the output of the laser decreases, be sure to adjust the laser power.

- Laser power checker (FY9-4013)
- Digital multimeter (CK-0436)

Caution:

Check the values recorded on the label attached to the right front door.

1) Turn off the power switch.
2) Remove the copyboard glass; then, remove the lens base cover and the laser scanner cover.
3) Turn on the power switch.
4) Open the front left cover. Make sure the front left cover will not close.
5) Remove the left inside cover.
6) Remove the laser power checker inlet cover.
7) Set the laser power checker switch to '2'.
8) Holding the laser power checker [1] so that its light-receiving face is on the right, fit it into the slot [2].
9) Insert the probe of the laser power checker into the digital multimeter, and set the range to 200 mV.
10) Select FUNCTION>ADJUST>**POWER** in service mode, and press OK. (laser output)
11) Check the reading of the digital multimeter.
12) Compare the reading (Pmax) indicated on the label and the measurement. If different, turn VR2 [3] on the laser driver PCB.

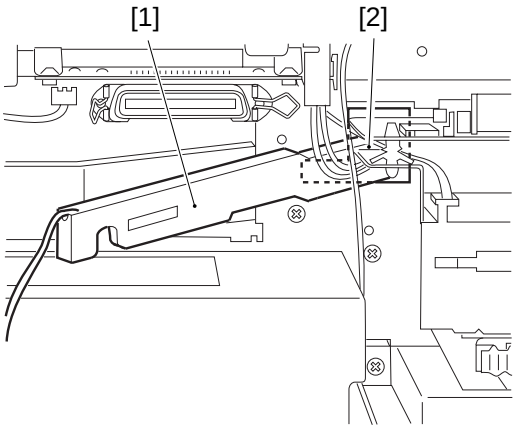

Figure 13-264

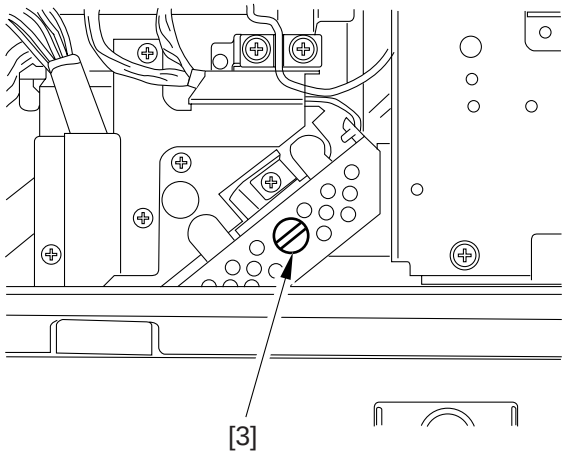

Figure 13-265

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Caution:

1. Turn VR2 slowly while monitoring the output of the laser power checker so as to avoid increasing the laser power excessively. Turning VR2 counterclockwise will decrease the laser output.
2. Be sure not to exceed the value recorded on the label. Otherwise, the laser diode may become damaged.
3. Do NOT press the Copy Start key while making adjustments using VR2.

13) Press the Stop key to stop the laser output.
14) Adjust the laser.

4 Adjusting the Laser

Caution:

Be sure to adjust the laser power before starting the following work:

1) Select ADJUST>LASER in service mode.
2) Select T-V00 and enter '255'; then, press OK.
3) Select T-V00-ON, and press OK. (The laser will turn on.) Take notes of the reading (offset). To stop the laser output, press the Stop key.
4) Select T-V00, and adjust T-V00 so that the following is true: offset value + (0.15 to 0.20 mV)
5) Likewise, adjust T-VFF, PE-V00, P3-VFF-1, P3-VFF-2, P3-VFF-3, and P3-VFF-4. To stop the laser output, press the Stop key. Study the following table for an idea of optimum output.

Item	Standard (mV)	Laser ON key
T-V00	Offset value + (0.15 to 0.2)	T-V00-ON
T-VFF	Pmax ×70%	T-VFF-ON
P3-V00	Offset value + (0.1 to 0.15)	P3V00-ON
P3-VFF-1	Pmax ×45%	P3-V1-ON
P3-VFF-2	Pmax ×55%	P3-V2-ON
P3-VFF-3	Pmax ×65%	P3-V3-ON
P3-VFF-4	Value on label ×70%	P3-V4-ON

6) Press the Reset key to end service mode.
7) Turn off the power switch.

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8) Detach the laser power checker, and secure the slot cover in place.
9) Mount the left inside cover.

5	**When Replacing the Scanning Lamp, Standard White Plate, Lamp Regulator, Lamp Reflecting Plate, Analog Processor PCB, No. 1 Mirror Base Unit, No. 1 Mirror, No. 2 Mirror Base Unit, No. 2 Mirror, No. 3 Mirror, and CCD Unit**

1) Close the front cover, and wait until the copier enters standby state. (Do not open the front cover while CCD-ADJ is being executed.)
2) Replace the part, and execute FUNCTION>CCD>**CCD-ADJ** in service mode.
When 'END' appears, end the operation. If 'ERR' appears, start over.

6	**When Replacing the BD Unit**

If you have replaced the BD unit, adjust the position as follows:
1) Set the meter range to VAC.
2) Connect the + probe to the check pin (TP301) and the - probe to the check pin GND on the BD PCB.
3) Execute FUNCTION>LASER>**POWER** in service mode.
4) Loosen the screw used to secure the BD unit in place, and tighten it when the output reading of the meter is maximum.

7	**Checking the Environment Measurement PCB**

The environment measurement PCB and the environment sensor are checked using the environment measurement PCB checker (TKN-0457) and the environment sensor calibrator (TKN-0456).

a. Checking the Environment Measurement PCB

1) Turn off the power.
2) Open the hopper.
3) Remove the environment sensor from the environment measurement PCB, and fit the environment measurement PCB checker (TKN-0457) in its place.
4) Insert the door switch actuator, and turn on the power.
5) Set the meter range to 30 VDC.
Check to make sure that the voltage between J1-1 (+) and J1-2 (-) on the environment measurement PCB is 24 ± 2.4 V. If not, check the DC power supply PCB(DCP1).
6) Select DISPLAY>**ANALOG** in service mode.
7) Check the temperature and the humidity on the ANALOG screen.
TEMP: 25 ± 5°C
ABS-HUM: 40 ± 10%
8) Check to make sure that the reading is as indicated.
If no, go to step 9).
If yes, go to step 14).

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9) Press the Reset key, and turn off the power switch.
10) Disconnect the connector J1 of the environment measurement PCB.
11) Turn on the power switch.
12) Check the temperature and the humidity on the DISPLAY>**ANALOG** screen in service mode.
    TEMP: 25 ±5°C
    ABS-HUM: 36 ±10%
13) Check to see that the reading is as indicated.
    If not, suspect a fault on the DC driver PCB or the CPU PCB.
14) Press the Reset key.
15) Turn off the power switch.
16) Connect the connector J1 to the environment measurement PCB.
17) Detach the environment measurement PCB checker from the environment measurement PCB, and connect the environment sensor in its place.
18) Attach all covers.

b. Checking the Environment Sensor

1) Check the environment measurement PCB.
2) Turn on the power switch, and leave the copier alone for 5 min.
3) Check the temperature and the humidity on the DISPLAY>**ANALOG** screen in service mode, and record the readings. (data A)
    TEMP: °C data A1
    ABS-HUM: % data A2
4) Press the Reset key, and turn off the power switch.
5) Detach the environment sensor from the environment measurement PCB, and insert the environment sensor calibration tool (TKN-0456) in its place.
6) Turn on the power switch, and leave the copier alone for 5 min.
7) Check the temperature and the humidity on the DISPLAY>**ANALOG** screen in service mode, and take notes of them.
    TEMP: °C data B1
    ABS-HUM: % data B2
8) Compare data A and data B.
    · difference between data A1 and data B1 is 0 ± 5.
    · difference between data A2 and data B2 is 0 ± 20
    If the difference between data A and data B is not as indicated, replace the environment sensor.
9) Press the Reset key, and turn off the power switch.
10) Detach the environment sensor calibrating tool from the environment measurement PCB, and fit the environment sensor.
11) Mount all covers.

Caution:

The environment sensor calibration tool (TN-0456) is adjusted at the factory to high precision. Be sure to store it in an airtight container with a drying agent for storage.

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8 Registering the Cassette/Multifeeder Paper Width Basic Value

Perform what follows below for the following:

- If you have replaced the copier's paper width detecting VR (including the multifeeder).
- If you have adjusted the front/rear registration of the cassette.

You need to register a paper width basic value of STMTR and A4R for each cassette; for the multifeeder, you must register A6R, A4R, and A4.

a. Cassette

1) Slide out the cassette for which you want to register the basic value, and set the paper width guide inside the cassette to A4R.
2) Set the cassette in the copier.
3) Select FUNCTION>CST in service mode.
4) Select a size (C1-A4R, C2-A4R, C3-A4R) for the cassette in question, and press OK.
5) See that basic value 1 has been registered.
6) Slide out the cassette for which you want to register a basic value, and set the paper width guide plate inside the cassette to STRMTR.
7) Set the cassette in the copier.
8) Select FUNCTION>**CST** in service mode.
9) Select a size (C1-STMTR, C2-STMTR, C3-STMTR) for the cassette in question, and press OK.
10) See that basic value 2 has been registered.
11) Set the cassette to the size desired by the user.

b. Multifeeder

1) Set the width of the multifeeder guide plate to A6R (105 mm).
2) Select service mode FUNCTION>CST.
3) Select MF-A6R for which you want to register a basic value, and press OK.
4) See that basic value 1 has been registered.
5) Set the width of the multifeeder guide plate to A4R (210 mm).
6) Select MF-A4R for which you want to register a basic value, and press OK.
7) See that basic value 2 has been registered.
8) Set the width of the multifeeder guide plate to A4 (297 mm).
9) Select MF-A4 for which you want to register a basic value, and press OK.
10) See that basic value 3 has been registered.

Caution:

After registering basic values, be sure to record the values on the service label.

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9 Checking the Surface Potential System

If an image fault has occurred, you must be sure if the cause is in the static latent image formation block (including the photosensitive drum and the potential control system) or the developing/transfer system. To that end, the surface potential must be checked as follows:

a. Checking the Surface Potential

1) Select FUNCTION>**DPC**>**DPC** in service mode (for potential control).
2) Check the following using DISPLAY>**DPOT** in service mode.

Screen display	Guide
V00-500	430 to 570
V00-700	600 to 800
VFF-500	50 to 150
VFF-700	100 to 200

3) If the value is not as indicated, make a zero-level check.

b. Zero-Level Check

You can make use of a zero-level check to see whether the surface potential control circuit is good or not, thereby finding out whether the level shift circuit of the DC driver PCB and the potential measurement unit is good or not.

Reference:

A zero-level check is designed to find out whether the CPU reads the surface potential of the drum as '0' when it is 0 V.

A zero-level check may be either of the following two:
Method 1: to find out whether the level shift circuit on the DC driver PCB is good or not
Method 2: to find out whether the potential measurement circuit is good or not

Method 1

1) Remove the rear cover.
2) Turn on the power switch, and wait until the copier is in standby state.
3) Disconnect the connector J4 (J440) of the potential measurement PCB.
4) Short the check pins J1040-1 and -2 on the DC driver PCB with a jumper wire.
5) Check to make sure that the reading of DISPLAY>DPOT>**DPOT** is 80 ± 30 V in service mode.
   If yes, the part is normal. Go to step 8).
6) Measure the voltage between GND CP and CP4 of the DC driver PCB to see if it is 0.49 ± 0.1 V.
   If no, suspect a fault in the level shift circuit on the DC driver PCB. If yes, suspect a fault in the A/D converter on the CPU PCB.
7) Turn off the power switch, and disconnect the jumper wire; then, connect the connector.
8) Mount the rear cover, and turn on the power switch.

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Method 2
1) Turn off the power switch.
2) Remove the photosensitive drum unit.
3) Fit the potential sensor electrode (TKN-0197) to the potential sensor.

Caution:
When fitting the potential sensor electrode to the potential sensor, make sure that magenta of the electrode will not come into contact with the potential sensor base.

4) Attach the clip of the jumper line to the potential sensor electrode.

Caution:
Be sure NOT to let the clip come into contact with the sensor cover. Further, be sure to allow enough distance from the sensor window.

5) Connect one end of the jumper wire to the copier's chassis metal plate (GND) of the copier.
6) Insert the door switch actuator into the door switch assembly.
7) Turn on the power switch.
   After turning on the power switch, do NOT touch the potential sensor assembly.
8) Check to make sure that DISPLAY>DPOT>**DPOT** is 0 ± 30 V in service mode.

Reference:
If the reading is as indicated in method 1 but not as indicated in method 2, suspect dirt on the sensor or a fault in the potential measurement unit.
If the reading is not as indicated in method 1 and method 2, you may assume that the signal path from the potential sensor unit to the CPU on the CPU PCB is normal.

9) Turn off the power switch.
10) Detach the potential sensor electrode.
11) Mount the photosensitive drum unit.
12) Turn on the power switch.

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10 When Replacing the CCD Driver PCB

Check the setting of the DIP switch on the old DC driver PCB, and set the DIP switch on the new DC driver PCB.

11 Checking the Photointerrupter

The copier allows the use of its service mode when checking its photointerrupers in addition to the use of a conventional meter.

1. Using a Meter

1) Set the meter range to 30 VDC.
2) Connect the - probe of the meter to J101-7 (GND) on the DC driver PCB or J3-3 (GND) on the deck driver PCB.
3) Connect the (+) probe of the meter to the terminals (on the driver PCB) indicated on the pages that follow.
4) Make checks as shown.

2. Using Service Mode

1) Select I/O DISPLAY in service mode.
2) Bring up the I/O address to check, and make checks as shown.

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Sensor	Connector No. I/O address	Checks		I/O display	Voltage reading
PS1 Original scanner HP sensor	J602-2 ---------	Move the scanner by hand while in standby.	When the light-blocking plate is at PS1, While the light-blocking plate is not at PS1,	-- --	5V 0V
PS2 Side A sensor	J1014-B8 P009-8	Move the transfer drum by hand while in standby.	When the light-blocking plate is at PS2, When the light-blocking plate is not at PS2,	1 0	5V 0V
PS3 Side B sensor	J1014-B7 P009-9	Move the transfer drum by hand while in standby.	When the light-blocking plate is at PS3, When the light-blocking plate is not at PS3,	1 0	0V 5V
PS4 C sensor	J1014-B5 P009-10	Move the transfer drum by hand while in standby.	When the light-blocking-plate is at PS4, When the light-blocking plate is not at PS4,	1 0	5V 0V
PS5 Pre-transfer sensor	J1014-B3 P001-9	Put paper on the transfer drum and move it by hand while in standby.	When paper is present over PS5, When paper is absent over PS5,	1 0	5V 0V
PS6 Post-transfer sensor	J1014-B2 P001-10	Put paper over PS6 while in standby.	When paper is present over PS6, When paper is absent over PS6,	1 0	5V 0V
PS7 Separation sensor	J10013-B4 P001-11	Put paper over PS7 while in standby.	When paper is present over PS7, When paper is absent over PS7,	1 0	5V 0V
PS8 Attraction/ transfer locking cam HP sensor	J1014-B1 P009-3	Take measurements during copying operation.	When cam is not at HP, When cam is at HP,	1 0	5V 0V
PS9 Multifeeder pickup sensor	J1017-B10 P001-5	Put paper over PS9 while in standby.	When paper is present over PS9, When paper is absent over PS9,	1 0	5V 0V
PS10 Fixing oil level sensor	J1004-B5 P006-4	Remove PS10 while in standby.	When oil is present, When oil is absent,	1 0	5V 0V

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Sensor	Connector No. I/O address	Checks		I/O display	Voltage reading
PS11 Fixing upper cleaning belt length sensor	J1004-B2 P006-3	Put paper over PS11 while in standby.	When paper is present over PS11, When paper is absent over PS11,	1 0	5V 0V
PS12 Internal delivery sensor	J1004-B3 P001-13	Put paper over PS12 while in standby.	When paper is present over PS12, When paper is absent over PS12	1 0	5V 0V
PS15 Multi feeder paper sensor	J1017-B16 P002-13	Put paper over PS15 while in standby.	When paper is present over PS15, When paper is absent over PS15,	1 0	5V 0V
PS17 Multifeeder lifter H sensor	J1017-B13 P007-15	Move up the lifter while in standby.	When the lifter is up, When the lifter is down,	1 0	5V 0V
PS18 Multifeeder lifter L sensor	J1017-B12 P007-14	Move up the lifter while in standby.	When the lifter is up, When the lifter is down,	1 0	5V 0V
PS19 (CLC1120/ 1130) Cassette 1 lifter sensor	J1020-B3 P007-10	Put paper over PS19 while in standby.	When paper is present over PS19, When paper is absent over PS19	1 0	5V 0V
PS20 (CLC1120/ 1130) Cassette 1 paper sensor	J1020-B5 P002-10	Put paper over PS20 while in standby.	When paper is present over PS20, When paper is absent over PS20,	1 0	5V 0V
PS21 (CLC1120/ 1130) Pickup vertical path 1 sensor	J1019-A2 P001-2	Put paper over PS21 while in standby.	When paper is present over PS21, When paper is absent over PS21,	1 0	5V 0V
PS22/DPS22 Cassette 2/1 lifter sensor	J1017-A5 P007-1	Push the light-blocking plate while in standby.	When the light-blocking plate is pushed, When the light-blocking plate is not pushed,	1 0	5V 0V
PS23/DPS23 Cassette 3/2 lifter sensor	J1018-A3 P007-8	Push the light-blocking plate while in standby.	When the light-blocking plate is pushed, When the light-blocking plate is not pushed,	1 0	5V 0V
PS24/DPS24 Cassette 2/1 paper sensor	J1017-A7 P002-9	Put paper over PS24 while in standby.	When paper is present over PS24, While paper is not present over PS24,	1 0	5V 0V

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Sensor	Connector No. I/O address	Checks		I/O display	Voltage reading
PS25/DPS25 Cassette 3/2 paper sensor	J1018-A5 P002-8	Put paper over PS25 while in standby.	When paper is present over PS25, When paper is absent over PS25,	1 0	5V 0V
PS26 Pickup vertical path 2/1 sensor	J1017-A4 P001-1	Put paper over PS26 while in standby.	When paper is present over PS26, When paper is absent over PS26,	1 0	5V 0V
PS27 Pickup vertical path 3/2 sensor	J1018-A2 P001-2	Put paper over PS27 while in standby.	When paper is present over PS27, When paper is absent over PS27,	1 0	5V 0V
PS28 (CLC1150) Re-pickup vertical path sensor	J1019-A2 P001-3	Put paper over PS28 while in standby.	When paper is present over PS28, When paper is absent over PS28,	1 0	5V 0V
PS30 Pre-registration sensor	J1013-B6 P002-15	Put paper over PS30 while in standby.	When paper is present over PS30, When paper is absent over PS30,	1 0	5V 0V
PS31 External delivery sensor	J1008-B2 P001-12	Put paper over PS31 while in standby.	When paper is present over PS31. When paper is absent over PS31,	1 0	5V 0V
PS32 (CLC1150) Delivery vertical path 1 sensor	J1029-6 P002-0	Put paper over PS32 while in standby.	Paper is present over PS32, Paper is absent over PS32,	1 0	5V 0V
PS33 (CLC1150) Delivery vertical path 2 sensor	J1029-11 P002-1	Put paper over PS33 while in standby.	When paper is present over PS33, When paper is absent over PS33,	1 0	5V 0V
PS34 (CLC1150) Duplexing path paper sensor	J1022-B7 P002-3	Put paper over PS34 while in standby.	When paper is present over PS34, When paper is absent over PS34,	1 0	5V 0V
PS35 (CLC1150) Duplexing reversal paper sensor	J1022-B8 P002-4	Put paper over PS35 while in standby.	When paper is present over PS35, When paper is absent over PS35,	1 0	5V 0V
PS36 (CLC1150) Duplexing tray paper sensor	J1022-B6 P002-11	Put paper over PS36 while in standby.	When paper is present over PS36, When paper is absent over PS36,	0 1	0V 5V

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Sensor	Connector No. I/O address	Checks		I/O display	Voltage reading
PS37 (CLC1150) Duplexing inlet paper sensor	J1022-A3 P002-2	Put paper over PS37 while in standby.	When paper is present over PS37, When paper is absent over PS37,	1 0	5V 0V
PS40 (CLC1150) Paper jogging guide HP sensor	J1022-A4 P009-4	Move the guide while in standby.	While the guide is present over PS40, While the guide is absent over PS40,	1 0	5V 0V
PS41 Right front cover sensor	J1027-B8 P004-1	Open and close the cover while in standby.	When the cover is closed, When the cover is open,	1 0	5V 0V
PS42 Left front cover sensor	J1027-A8 P004-2	Open and then close the cover while in standby.	When the cover is closed, When the cover is open,	1 0	5V 0V
PS43 Delivery cover sensor	J1027-B2 P004-0	Open and then close the cover while in standby.	When the cover is closed, When the cover is open,	1 0	5V 0V
PS44 Pickup cover sensor	J1007-B5 P004-3	Open and close the cover while in standby.	When the cover is closed, When the cover is open,	1 0	5V 0V
PS46 (CLC120/ 1130) Cassette 1 open/closed sensor	J1020-B2 P008-3	Open and close the cassette while in standby.	When the cassette is closed, When the cassette is open,	1 0	5V 0V
PS47/DPS47 Cassette 2/1 open/closed sensor	J1017-A3 P008-2	Open and close the cassette while in standby.	When the cassette is closed, When the cassette is open,	1 0	5V 0V
PS48/DPS48 Cassette 3/1 open/closed sensor	J1018-A1 P008-1	Open and close the cassette while in standby.	When the cassette is closed, When the cassette is open,	1 0	5V 0V
PS49 M developing assembly HP sensor	J1016-B2 P00A-8	Take measurements during copying operation.	When at HP, When not at HP,	1 0	5V 0V
PS51 C developing assembly HP sensor	J1015-A3 P00A-9	Take measurements during copying operation.	When at HP, When not at HP,	1 0	5V 0V

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Sensor	Connector No. I/O address	Checks		I/O display	Voltage reading
PS53 Y developing assembly HP sensor	J1016-A2 P00A-10	Take measurements during copying.	When at HP, When not at HP,	1 0	5V 0V
PS55 Bk developing assembly HP sensor	J1015-B3 P00A-11	Take measurements during copying operation.	When at HP, When not at HP,	1 0	5V 0V
PS57 Transfer drum HP sensor	J1002-A2 P009-1	Take measurements during copying.	When at HP, When not at HP,	1 0	5V 0V
PS59 Transfer drum cleaner HP sensor	J1002-B2 P009-2	Take measurements during copying operation.	When at HP, When not at HP,	1 0	5V 0V
PS62 Multifeeder tray open/ closed sensor	J1017-B9 P004-6	Open and close the tray during standby.	When the tray is closed, When the tray is open,	1 0	0V 4V
PS67 Fixing lower cleaning belt length sensor	J1004-B1 P006-2	Put paper over PS67 while in standby.	When paper is present over PS67, When paper is absent over PS67,	1 0	5V 0V
PS68 Waste toner case full sensor	J1027-B4 P006-6	Put paper over PS68 while in standby.	When paper is present over PS68, When paper is absent over PS68,	1 0	0V 5V
PS69 Transparency sensor	J1013-B9 P001-6	Take measurements during copying operation.	When pepper is absent over PS69, When paper is present over PS69,	1 0	5V 0V
PS70 Registration sensor	J1013-B8 P001-8	Take measurements during copying operation.	When paper is absent over PS70, When paper is present over PS70,	1 0	5V 0V
PS71 Pre-cleaning paper sensor	J1007-B14 P00B-1	Take measurements during copying operation.	When paper is absent over PS71, When paper is present over PS71,	1 0	several V 0V
PS101 Deck pickup sensor	J5-B4 P001-4	Put paper over PS101 while in standby.	When paper is present over PS101, When paper is absent over PS101,	1 0	5V 0V
PS102 Deck paper absent sensor	J5-A4 P002-12	Put paper over PS102 while in standby.	When paper is present over PS102, When paper is absent over PS102,	1 0	5V 0V

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Sensor	Connector No. I/O address	Checks		I/O display	Voltage reading
PS103 Deck lifter upper limit sensor	J5-A7 P007-13	Put the light-blocking plate while in standby.	When the light-blocking plate is pushed, When the light-blocking plate is not pushed,	0 1	5V 0V
PS104 Deck lifter position sensor 18	J5-A10 ---------	Push the light-blocking plate while in standby.	When the light-blocking plate is pushed, When the light-blocking plate is not pushed,	- -	5V 0V
PS105 Deck set sensor	J6-4 P016-14	Push the light-blocking plate while in standby.	When the light-blocking plate is pushed, When the light-blocking plate is not pushed,	0 1	5V 0V
PS107 Deck paper level upper sensor	J4-5 P016-12	Push the light-blocking plate while in standby.	When the light-blocking plate is pushed, When the light-blocking plate is not pushed,	0 1	5V 0V
PS108 Deck paper level lower sensor	J4-2 P016-11	Push the light-blocking plate while in standby.	When the light-blocking plate is pushed, When the light-blocking plate is not pushed,	0 1	5V 0V
PS109 Deck open sensor	J6-7 P016-15	Release the deck assembly while in standby.	When the deck assembly is open, When the deck assembly is closed,	1 0	0V 5V

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III. TROUBLESHOOTING FAULTY IMAGES

A. Making Initial Checks

1. Environment of the Site

Check the site to see if it satisfies the following:

a. The voltage of the power supply is as rated (± 10%).
b. It is not in a high temperature or high humidity environment (especially near a water faucet, water boiler, humidifier), and it is not too cold. It is not near a source of fire, and it is not subject to dust.
c. It is not subject to ammonium gas.
d. It is not exposed to direct sunlight. Otherwise, provide curtains.
e. It is well ventilated.
f. It will support the copier level.

2. Checking the Originals against Symptoms

Identify the problem for its cause, i.e., whether it is caused by an original or the copier.

a. Checking the Density of the Original
A diazo copy used as an original or an original with high transparency tend to produce copies which tend to be mistaken for "foggy" copies.
An original prepared in light pencil tends to produce copies which are likely to be mistaken for "light" copies.

3. Checking the Copyboard Cover, Copyboard Glass, and Standard White Plate

If any of these parts is soiled, clean it with a moist cloth. If scratches are found, replace it.

4. Checking the Charging Assemblies

a. Check each charging assembly for dirt and a fault in its charging wire/charging brush (scratches, deformation).
b. Clean the charging wire, grid wire, and shielding plate of each charging assembly. (Dry wipe the part with lint-free paper; then, clean it with alcohol. If dirt cannot be removed, replace it.)
c. Check the height of each charging wire.
d. Check to see each charging assembly is properly set.
e. Check the charging spring (especially of the separation charging assembly) for rusting.

5. Checking the Developing Assembly

a. Check to make sure that the rolls on both ends of the developing assembly are in contact with the photosensitive drum.
b. Check to make sure that the surface of the developing cylinder is coated with a uniform layer of toner.

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6. Checking the Paper

a. Check to see if the paper is of a type recommended by Canon.
b. Check to see if the paper is dry.
   Try copying on paper from a fresh pack.

7. Checking Periodically Replaced Parts

a. Replace any parts that have reached the end of service life.

8. Others

When a machine is brought in from a cold to warm place, condensation can occur inside it, causing various problems.

a. Condensation on the original scanner or the laser exposure system (glass, mirror, lens) can produce images that are too dark or light.
b. Condensation in the charging system can cause leakage of current.
c. Condensation on the pickup or feed guide can cause feeding faults.
   If condensation is noted, dry wipe the parts, and leave the machine alone for 10 to 20 min.

Caution:

If the density is uneven (different between front and rear), the images are too light, or the copies are foggy, try "Image Basic Adjustment Procedure" first.

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B. Standard Images

A "standard image" is an image that is as described below for the gray scale, color patch, and 3-color gradation scale of a copy made of the CA-1 Test Sheet in 4-full color:

1. Gray Scale
   No. 1 (dark area) is more or less black, and the density decreases according to number, with No. 8 (light area) barely visible and No. 9 white.
2. Color Patch
   Each color can be identified, and is not appreciably different from the color on the original (Test Sheet).
3. Photo
   There is no appreciable difference in color balance.
4. 3-Color Gradation Scale
   No. 8 is barely visible, and No. 9 is white.
5. Halftone Band
   Each color is not appreciably different from the color on the original (Test Sheet). The band as a whole is not appreciably uneven (moire is normal), and there is no appreciable difference in color between left and right.
6. Fogging
   The white background representing the white area of the original (Test Sheet) is not foggy.

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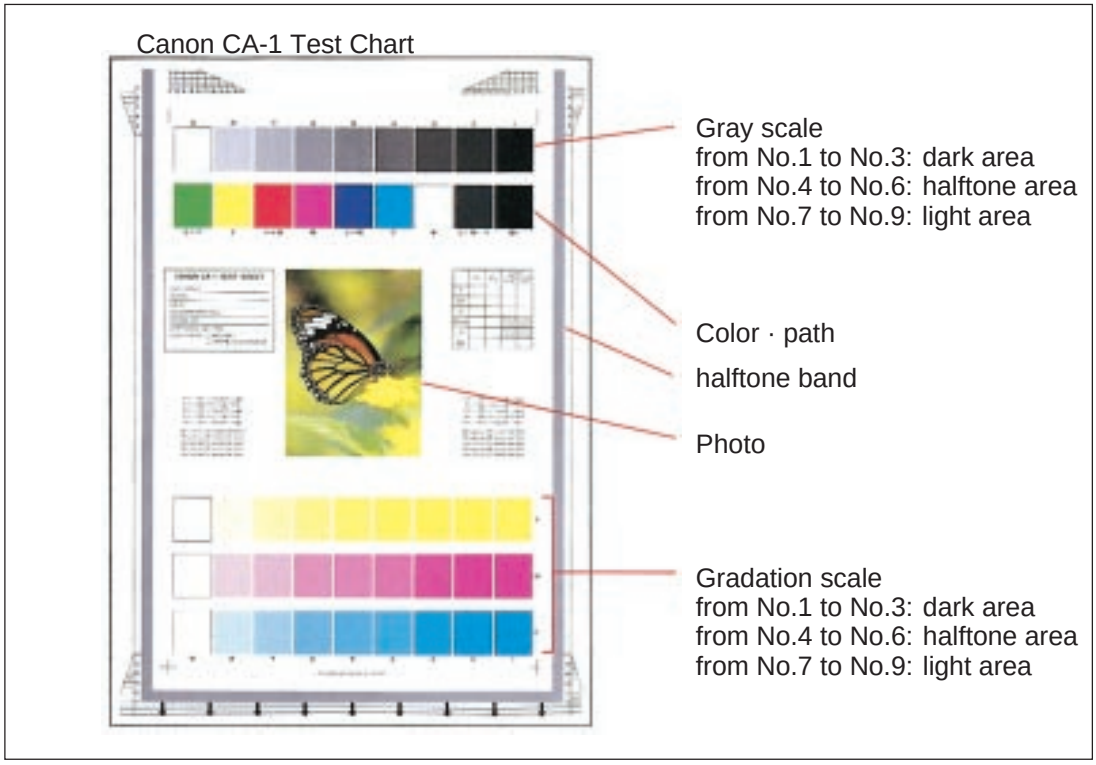
Canon CA-1 Test Chart
Gray scale
from No.1 to No.3: dark area
from No.4 to No.6: halftone area
from No.7 to No.9: light area
Color · path
halftone band
Photo
Gradation scale
from No.1 to No.3: dark area
from No.4 to No.6: halftone area
from No.7 to No.9: light area

Figure 13-301

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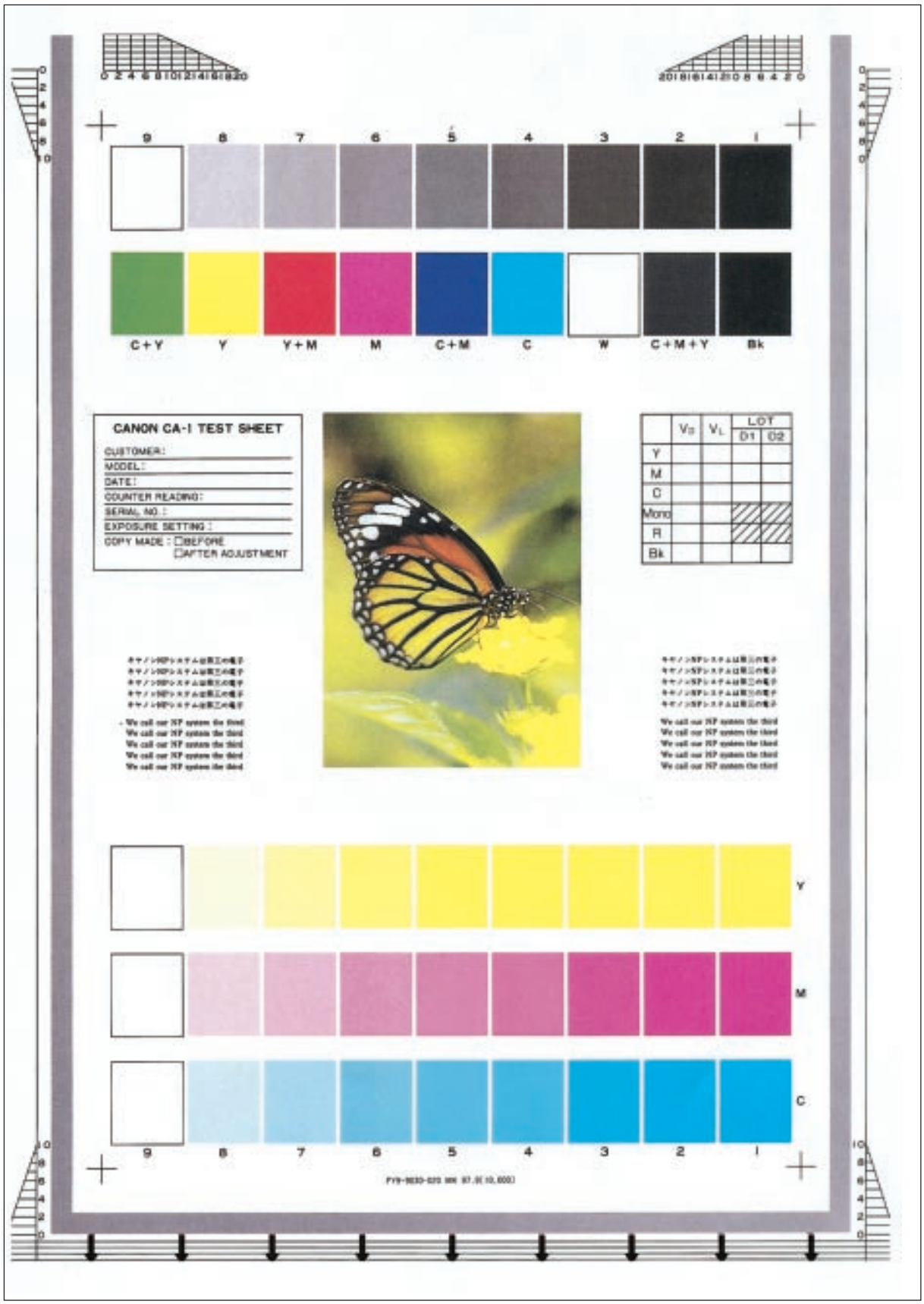

Figure 13-302 Standard Image Sample

C. Test Print

The copier possesses seven types of test prints, each one enabling identification of a specific type of image fault.

If a fault on normally made copies does not occur on its respective test print, you may suspect the original exposure system, CCD, and analog or image processor.

1. Selecting a Test Print Pattern

1) Set the copy count and copy paper size.
2) Select COPIER>TEST>**PG** in service mode.
3) Enter '1' to TXPH, and enter '0' to THRU.
4) Enter the TYPE number. (See Table 13-301.)
5) If you have selected TYPE=3, 4, 5, or 6, set the output color using COLOR_Y, COLOR_M, COLOR_C, or COLOR_K. (If, for instance, you want to generate magenta, set COLOR_M to '1'.)
6) Press the Copy Start key.

Caution:
At the end of a check using a test print, be sure to put TYPE back to '00'.

TYPE	Description
0	Image from the CCD (normal copying).
1	For R&D
2	256 colors
3	256 gradations
4	16 gradations
5	Halftone (entire area)
6	Grid
7 to 9	For R&D
10	MCYBk horizontal stripes (laser FF ON)
11	For R&D
12	YMCBk 64 gradations
13	BGR 64 gradations
14	Full color 16 gradations (YMCBk)
15	Full color light area 16 gradations (YMCBk)
16	MCYBk horizontal stripes (laser A0 ON)
17 to 99	For R&D

Table 13-301

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2. Horizontal Stripe Test Print (PG>TYPE=10, 16)

Use a horizontal test print to check the density of a dark area of each color, balance among colors, and white lines in reference to development.

a. Density of a Dark Area of Each Color and Balance of Colors
   The density must not be appreciably low (light).
   If the density is too low (light) for a single color, suspect a fault in the developing assembly of that color.
   If the density is too low (light) for all colors, suspect a fault in the laser system.

b. White Lines in Development
   If white lines are noted in a cyan area only of the copy, suspect a fault in the cyan developing assembly.

c. Uneven Density between Left and Right
   If uneven density between left and right is noted for all colors in the same way, suspect a fault in the height of the primary charging wire. If it is noted for a specific color only, suspect dirt on the developing roll and butting block.

d. Left/Right Image Position
   If the position of the cassette holder or ADJ-X, Y is wrong, the image position on the drum and that of copy paper will not match, eliminating the non-image width.
   Such a condition can cause toner to fly astray, soiling the inside of the copier.

Figure 13-303

3. 256-Color Test Print (PG>TYPE=2)

Us a 256-color test print to check hues.

A 256-color test print shows 256 colors using 16 x 16 frames starting at the leading edge of copy paper. (The rows that follow are repetitions of the frames.)

a. Hues of 256 Colors

The hues are as shown in the figure. Otherwise, suspect deterioration of the developer, deterioration of the photosensitive drum, and mixing of developers.

Caution:

In COPIER>TEST>PG of service mode, set all of the following to '1': COLOR-Y, COLOR-M, COLOR-C, COLOR-K.

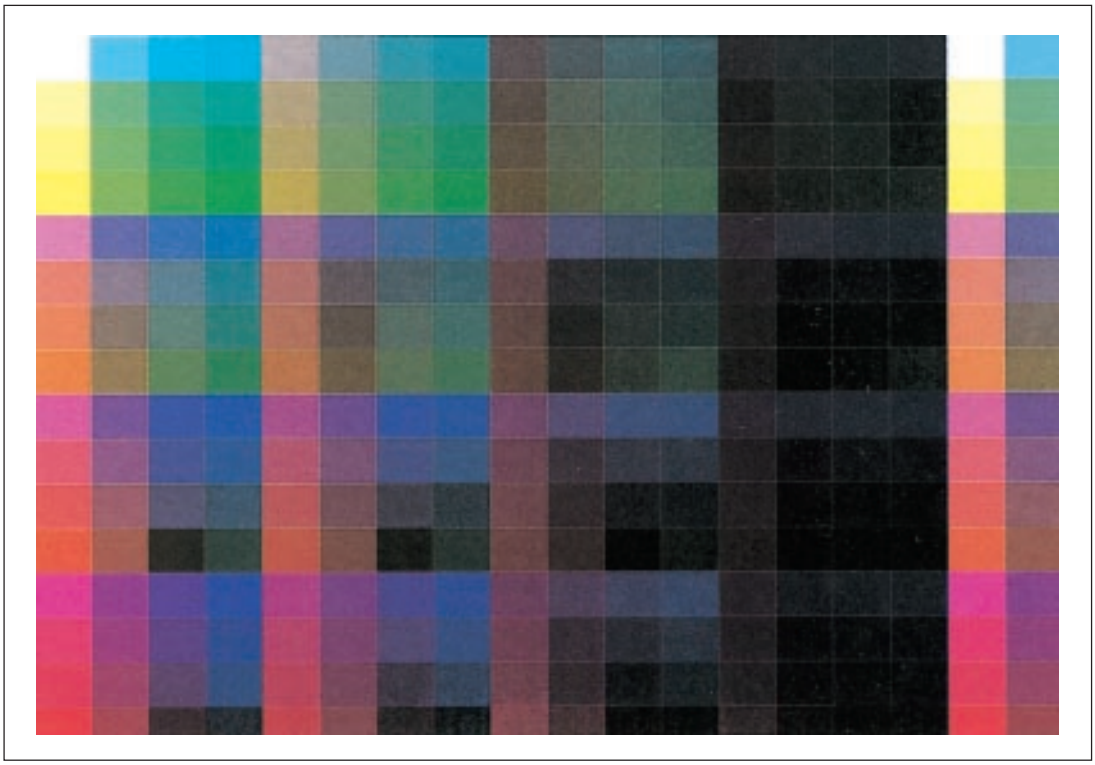

Figure 13-304

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4. 256-Gradation Test Print (PG>TYPE=3)

Use a 256-gradation test print to check gradation and balance among colors.

a. Gradation

Use the test print to check gradation between density 0 and density 255.

Caution:

You can generate a printout of each developer color using COPIER>TEST>PG of service mode and selecting the following: COLOR-Y, COLOR-M, COLOR-C, COLOR-K.

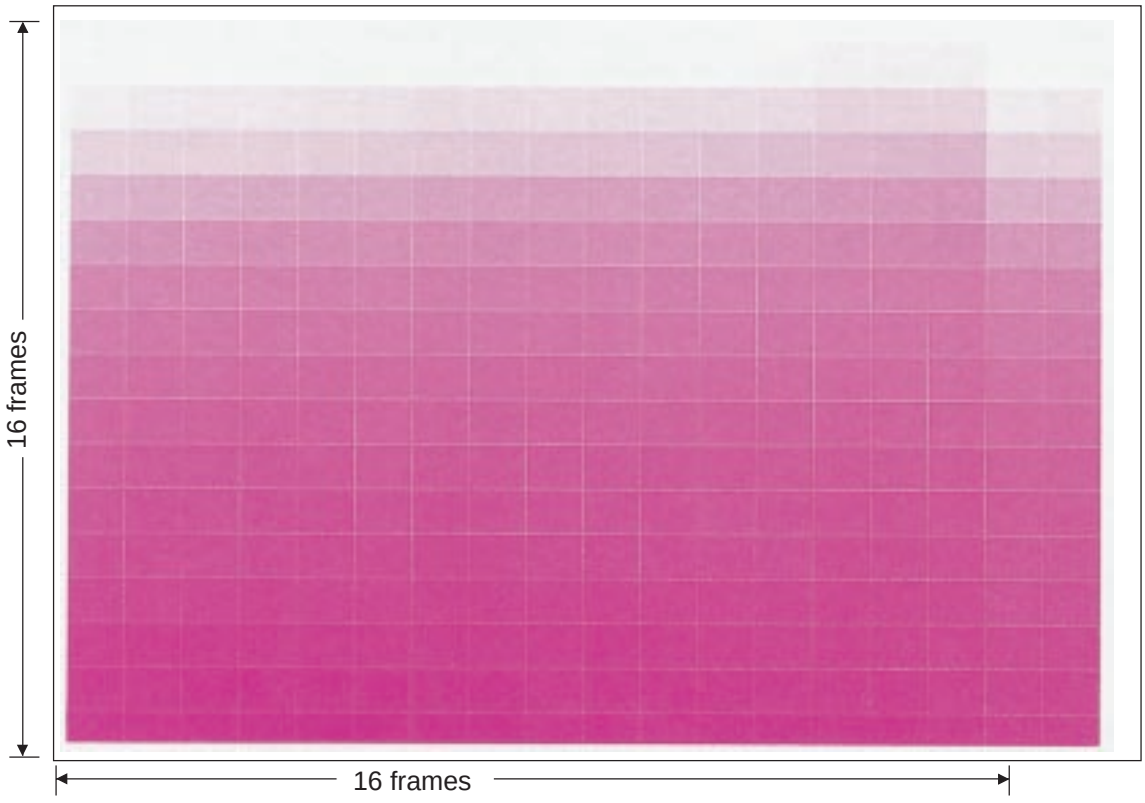

Figure 13-305 COLOR-M Set to '1'

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5. 16-Gradation Test Print (PG>TYPE=4)

Use a 16-gradation test print to check gradation, fogging, white lines, uneven density between left and right, and balance of colors.

a. Gradation
   If density graduation in 16 gradations is not noted as shown, suspect a fault in the laser system.
b. Fogging
   If fogging is noted in the white area of the figure, suspect a fault in the developing system or the photosensitive drum or wrong adjustment of the laser.
c. White Lines
   If white lines are noted in images, suspect a fault in the developing system.
d. Uneven Density between Left and Right
   If uneven density is noted between left and right, suspect dirt on the developing roller, dirt on the butting block, and a fault in the height of the primary charging wire.

Note:

You can generate a printout of each color using COPIER>TEST>PG of service mode and selecting the following: COLOR-Y, COLOR-M, COLOR-C, COLOR-K.

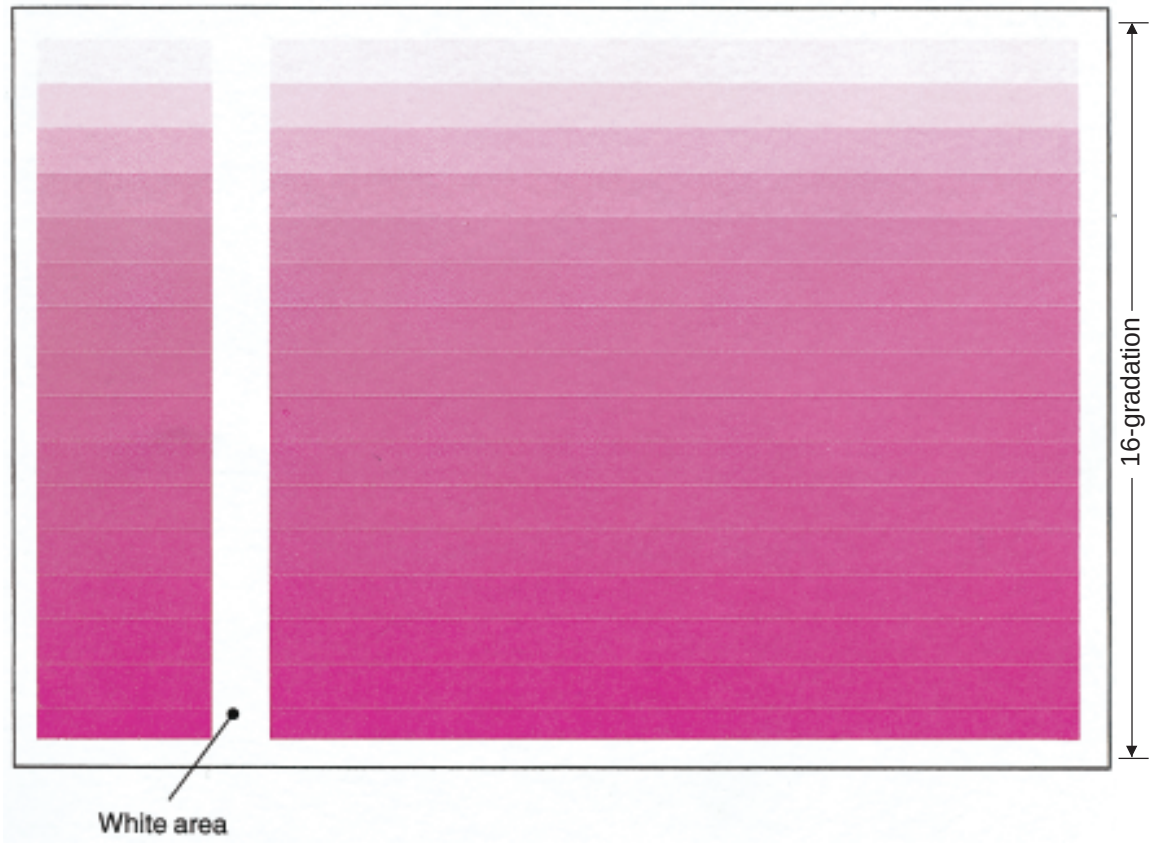

Figure 13-306 COLOR-M Set to '1'

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6. Halftone Test Print (PG>TYPE=5)

Use a halftone test print to check transfer faults, black lines, white lines, or uneven density at regular intervals.

a. Transfer Fault
   If a transfer fault is noted, suspect a fault on the transfer drum sheet, transfer blade, and static eliminator.
b. Black Lines
   If black lines are noted, suspect scratches on the photosensitive drum and dirt on the primary charging wire/grid plate.
c. White Lines
   If white lines are noted at the same position for all colors, suspect a fault on the transfer drum sheet and dirt on the primary charging wire.
   If they occur at different positions or if they are limited to a single color, suspect a fault in the developing assembly.
d. Uneven Density at Regular Intervals
   - Original scanner (at intervals of about 0.5 mm; not applicable to PGTYPE=5 test print)
   - Developing cylinder (at intervals of about 42 mm)
   - Bending mirror holder (at intervals of about 0.9 mm)
   - Drive gear

Note:

1. You can generate a printout for each color using COPIER>TEST>PG of service mode and selecting the following: COLOR-Y, COLOR-M, COLOR-C, COLOR-K.
2. If you want to change the density of the test print, use TEST>PG>**DENS-Y**, **M**, **C**, **K**.

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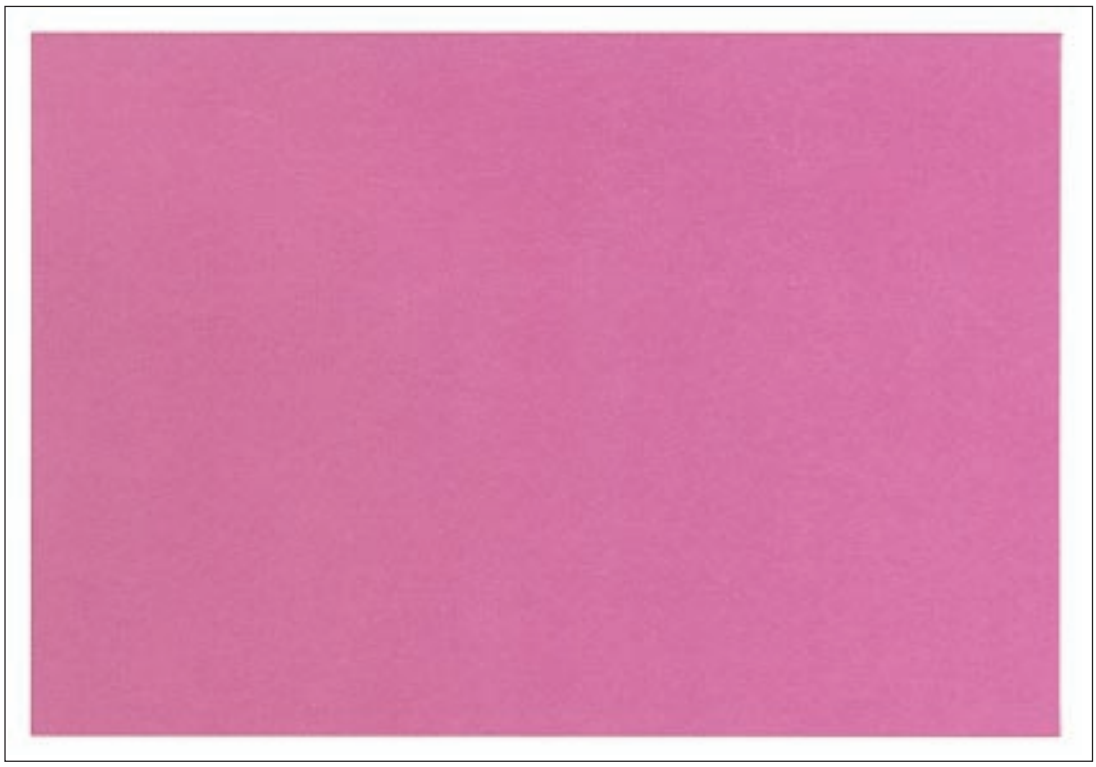

Figure 13-307 COLOR-M Set to '1'

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7. Grid Test Print (PG>TYPE=6)

Use a grid test print to check color displacement, angles, straight lines.

a. Color Displacement
If color displacement is noted, suspect a fault on the transfer drum sheet.
Even if you notice color displacement on a test print, you may not find it on a regular copy because of black text processing. The copier is normal if regular copies do not show color displacement. Use test prints if regular copies show color displacement, as when finding out the position of displacement and or when identifying the color.

b. Angles and Straight Lines
If faults are noted for right angles and straight lines, suspect displacement of the laser beam and a fault in the beam detection mechanism.

Caution:

1. You can generate printouts for each developed color using COPIER>TEST>PG of service mode and selecting the following: COLOR-Y, COLOR-M, COLOR-C, COLOR-K.
2. To change the density of test prints, use TEST>PG>**DENS-Y**, **M**, **C**, **K** of service mode.

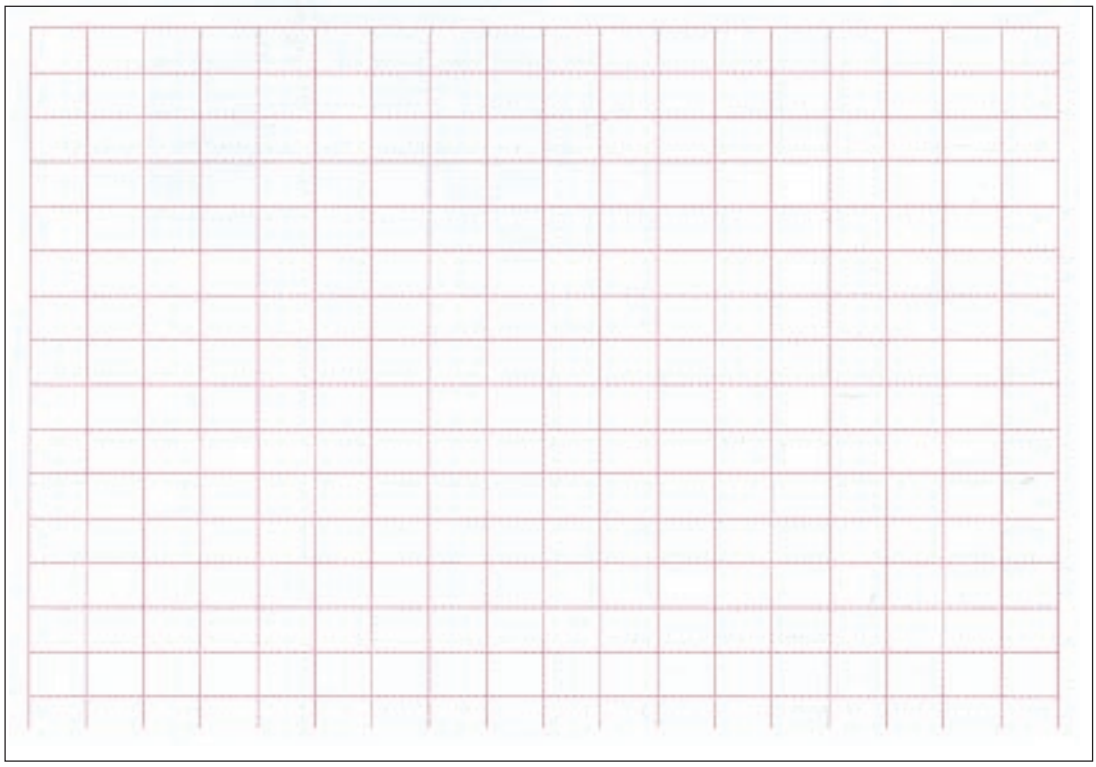

Figure 13-308 COLOR-M Set to '1'

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8. YMCBk 64-Gradation Test Print (PG>TYPE=12)

Use a YMCBk 64-gradation test print to check the gradation of each color (Y, M, C, Bk) at the same time.

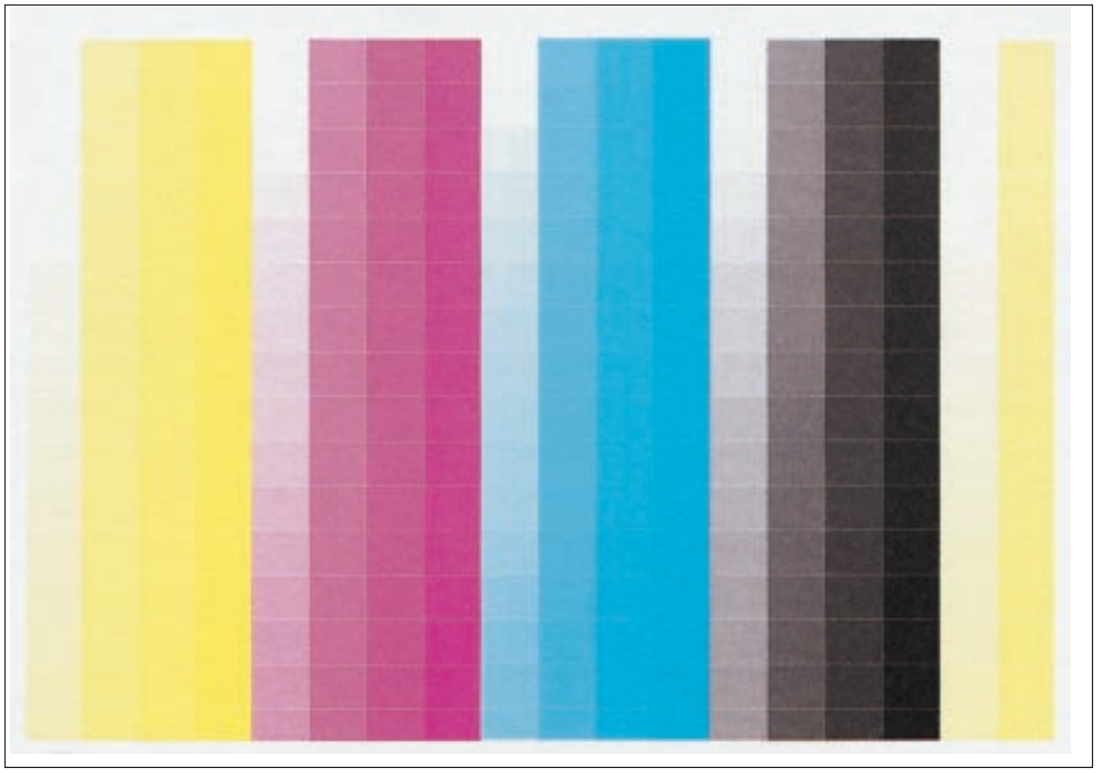

Figure 13-309

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9. BGR 64-Gradation Test Print (PG>TYPE=13)

Use a BGR 64-gradation test print to check the gray balance and gradation in BGR mode (2-color mode).

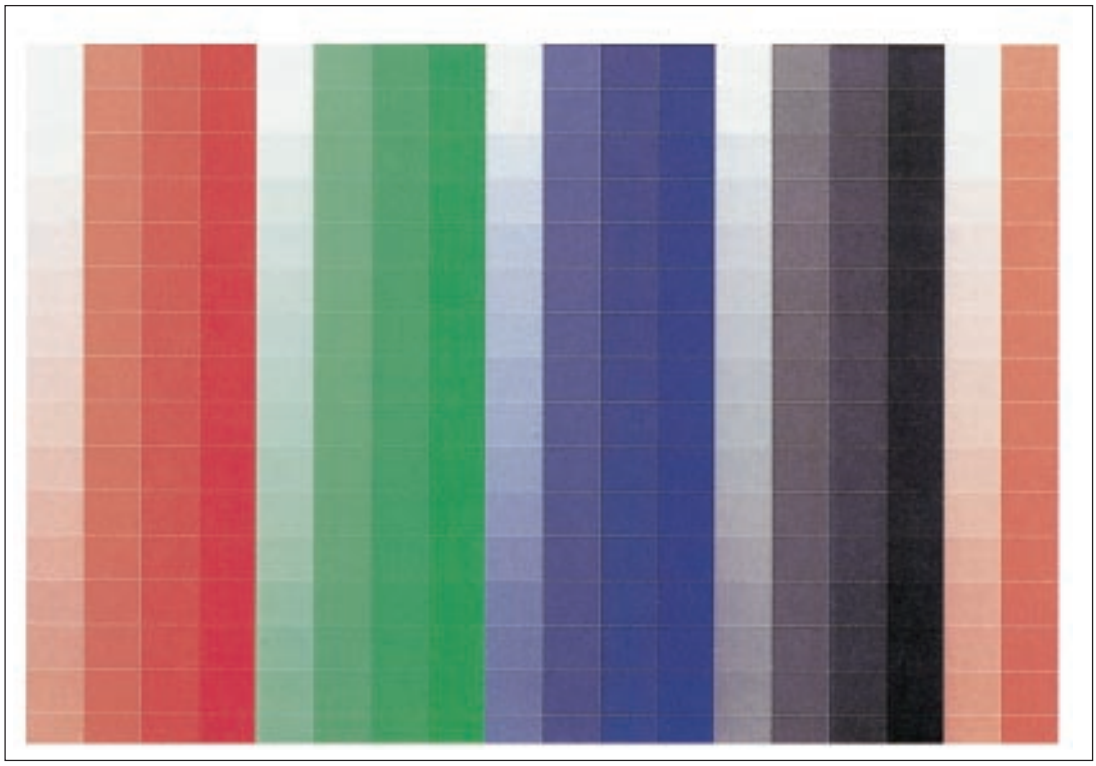

Figure 13-310

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10. Full-Color 16-Gradation (YMCBk) Test Pint (PG>TYPE=14)

Use a full-color 16-gradation (YMCBk) test print to check gray balance, gradation of each color (Y, M, C, Bk) and fogging.

a. Gray Balance
   Look at the gray scale area to find out whether each color is generated in even density.
b. Gradation
   Check the gradation of each color (Y, M, C, Bk) and for difference in density.
c. Fogging
   If a white area is foggy, suspect a fault in the developing system or the photosensitive drum, or wrong adjustment of the laser.

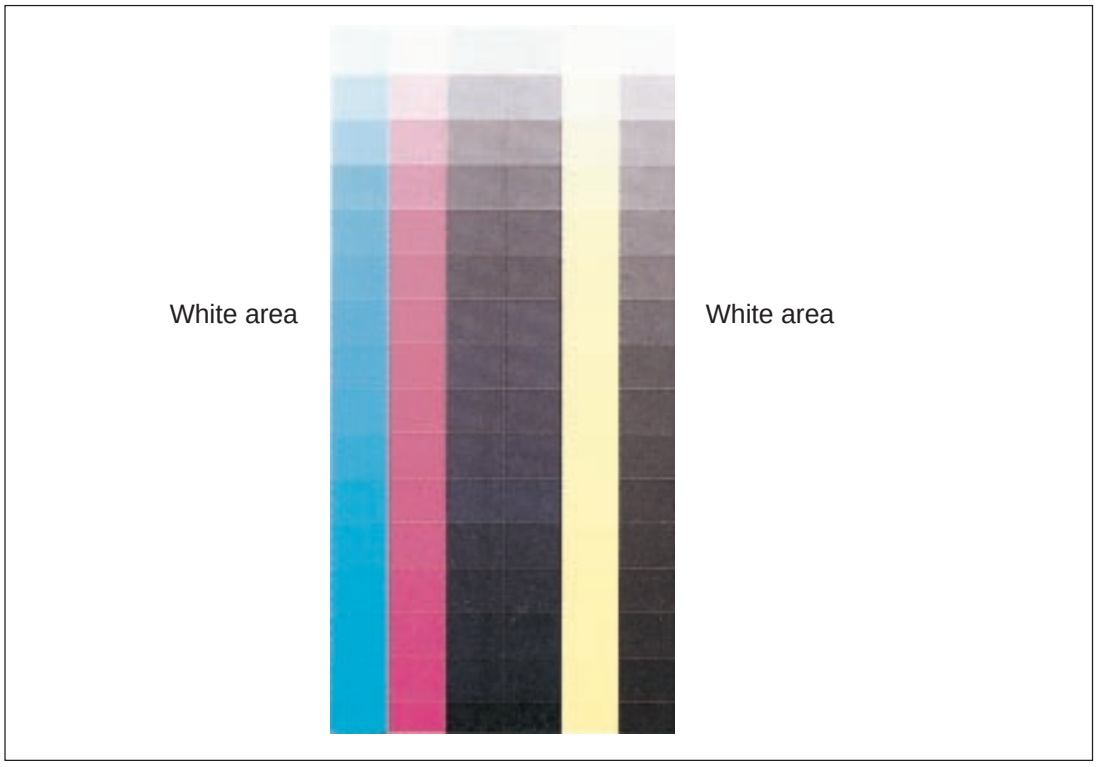

Figure 13-311

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11. Full-Color Light Area/16-Gradation (YMCBk) Test Print (PG>TYPE=15)

Use a full-color light area/16-gradation test print to check the gray balance of a light area and the gradation of each color (Y, M, C, Bk). Compared with one generated using P>TYPE=14, this test print makes a check easier.

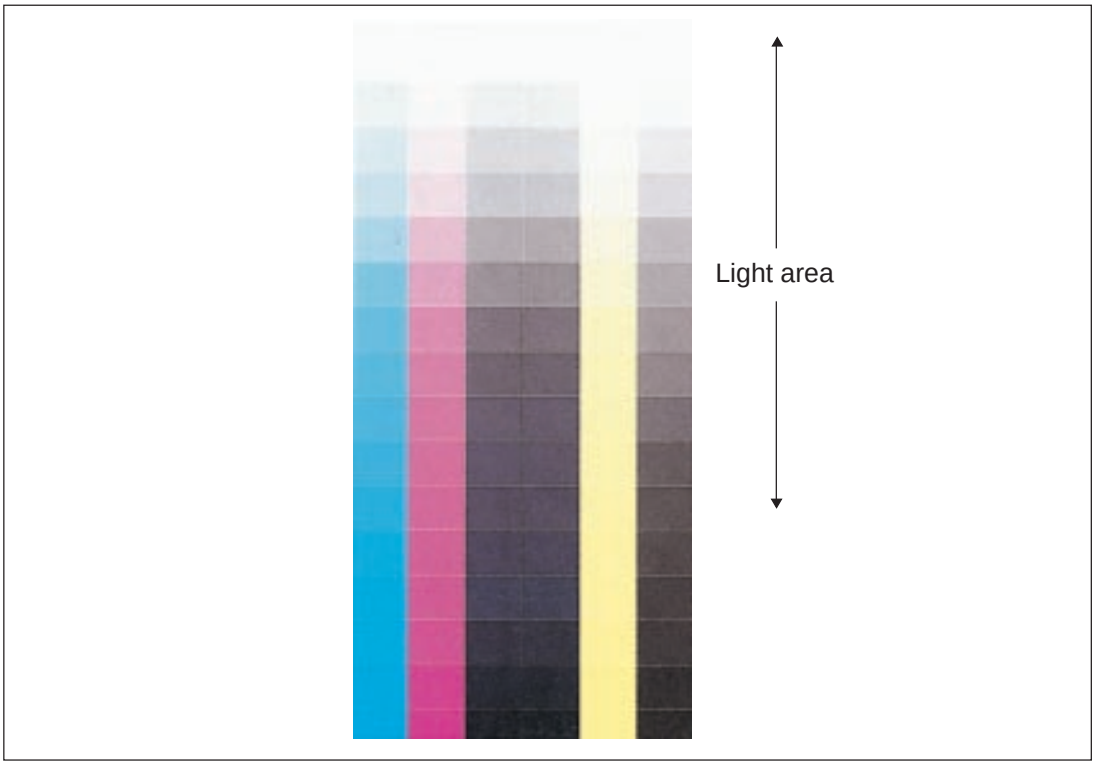

Figure 13-312

D. Troubleshooting Image Problems

No.	Fault
1	The copy is too light.
2	The copy has uneven density (vertical).
3	The copy has uneven density (horizontal).
4	The copy is foggy.
5	The copy has vertical lines.
6	The copy has white lines (vertical).
7	The copy has white spots (horizontal).
9	The copy has white spots.
10	The copy has white spots (in circles).
11	The copy has a soiled image/back.
12	The copy has a fixing fault.
13	The copy has stray toner (from fixing).
14	The copy is blank.
15	The copy is solid black.
16	The copy has color displacement.
17	The copy has uneven density at the center (A3).
18	The copy has lines (1st copy only; A3; near 175 mm along leading edge).
19	The copy has color displacement (magenta).
20	The copy has uneven density (magenta).
21	The copy has color displacement (A4; side A on transfer drum only; entire cyan area).
22	The copy has color displacement (entire area; appreciable in degree; random).
23	The copy has uneven density (at intervals of 1.8 mm).
24	The copy has uneven density (random).
25	The copy has uneven density (at regular intervals; other than 23 and 24 above).

1 The copy is too light.

Perform the Image Adjustment Basic Procedure.

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2 The copy has uneven density (vertical).

Cause	Step	Checks	Yes/No	Action
----------	1	Clean the primary charging assembly, dust-proofing glass, reflecting mirror, and lens. Is the problem corrected?	YES	End.
----------	2	Is the output of the halftone test print (TYPE=5) normal for all colors?	NO	Go to step 12.
Moire	3	Is the uneven density caused by moire patterns? · A "moire" pattern refers to lines of interference occurring when making a copy of an original consisting of dots.	YES	Reduce the degree of sharpness (photo), and store the new setting as part of standard mode. · Keep in mind that too low a setting will reduce the contrast of copies of photos.
Scanner	4	Clean the standard white plate, scanning lamp, and reflecting plate. Is the problem corrected?	YES	End.
	5	Is the standard white plate or the copyboard glass off its base?	YES	Mount the part properly.
	6	Has the original scanning lamp blackened?	YES	Replace the part.
Service mode	7	Are the settings of 'CCD' in service mode the same as those recorded on the service label?	NO	Enter the settings once again.
	8	Execute FUNCTION>CCD>CCD-ADJ. Is the problem corrected?	NO	Try replacing the image processor, analog processor, and the like.
Developing assembly	9	Is uneven density noted for all colors?	NO	Check the developing assembly and developing cylinder for which uneven density is noted. If a fault is found, clean or replace the part.
Grid plate (primary charging assembly)	10	Is the grid plate of the primary charging wire normal?	NO	Correct the grid plate.
Pre-exposure lamp	11	Does the pre-exposure lamp turn on during copying operation?	NO	Check the connection of J1008 on the DC driver PCB and check the wiring from J1008 to the pre-exposure lamp PCB; if normal, replace the pre-exposure lamp PCB.
————	12	Is the uneven density noted at the same position for all colors of the output image of the halftone test print (TYPE=5)?	NO	Go to step 9.

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Cause	Step	Checks	Yes/No	Action
Transfer/static eliminating system	13	Is the transfer blade or the transfer blade protective sheet warped or faulty?	YES	Correct the warping of the transfer blade. Or, replace the transfer charging assembly.
Fixing unit	14	Are there scratches or dents in the peripheral direction of the fixing roller (upper, lower)?	YES	Replace the fixing roller.
			NO	Check the fixing oil applying assembly, oil hose, oil tank, oil pump, and oil removing blade for a fault; if faulty, replace the part.

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3 The copy has uneven density (horizontal).

Cause	Step	Checks	Yes/No	Action
----------	1	Clean the primary charging assembly, dust-proofing glass, reflecting mirror, lamp, and lens. Is the problem corrected?	YES	End.
----------	2	Is the uneven density noted in a specific color of the output image of the halftone test print (TYPE=5)?	NO	Go to step 7.
Moire	3	Is the uneven density caused by moire patterns? · A "moire" pattern refers to lines of interference occurring when making a copy of an original consisting of dots.	YES	Lower the degree of sharpness (photo), and store the new setting in standard mode. · Keep in mind that too low a setting will reduce the contrast of copies of photos.
Photosensitive drum, developing assembly, fixing roller	4	Make an A3 copy. Is there a difference in density between leading edge and trailing edge?	NO	Check the photosensitive drum, developing assembly, fixing roller.
Service mode (CCD)	5	Are the settings of 'CCD' in service mode the same as those recorded on the service label?	NO	Enter the settings once again.
	6	Execute FUNCTION>CCD>CCD-ADJ. Is the problem corrected?	NO	Try replacing the image processor, analog processor, and the like.
Photosensitive drum drive system	7	Is the problem noted at intervals of several millimeters?	YES	Check the drive system of the photosensitive drum.
Transfer/static eliminating system	8	Is the transfer blade or the transfer blade protective sheet warped or faulty?	YES	Correct the warping of the transfer blade. Or, replace the transfer charging assembly.
Fixing unit	9	Are there scratches or dents in the axial direction of the fixing roller (upper, lower)?	YES	Replace the fixing roller.
			NO	Check the fixing oil applying assembly, oil hose, oil tank, oil pump, and oil removing blade for a fault, and replace any faulty part.

4 The copy has fogging.

Perform the Image Adjustment Basic Procedure.

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5 The copy has vertical lines.

Cause	Step	Checks	Yes/No	Action
----------	1	Clean the primary charging assembly, dust-proofing glass, reflecting mirror, and lens. Is the problem corrected?	YES	End.
----------	2	Is the problem noted in all colors on a halftone test print (TYPE=5)?	NO	Go to step 13.
Primary charging wire cleaner	3	Is the cleaner of the primary charging wire found in the middle of its path?	YES	Check the motor of the cleaner.
Cleaning	4	Is paper or foreign matter stuck on the cleaning blade of the photosensitive drum cleaner assembly?	YES	Remove the foreign matter, and clean the cleaning blade and the outside of the cleaner assembly.
	5	Is there deformation or damage on the edge of the cleaning blade? Feel the edge of the cleaning blade (with your finger) to check the presence/absence of scratches.	YES	If deformation or damage is found, remove the cause, and replace the cleaning blade.
	6	Are the vertical lines relatively wide and fuzzy?	YES	Check the waste toner feedscrew to see whether it is rotating; as necessary, apply grease. Check to see if waste toner has spread under the cleaning blade; as necessary, remove waste toner.
Developing assembly	7	Is the problem noted for all colors?	NO	Check the developing assembly and the developing cylinder for which the problem is noted; if a fault is found, clean or replace the part.
Transfer charging assembly	8	Is the transfer blade or the transfer blade protective sheet warped or faulty?	YES	Correct the warping of the transfer blade. Or, replace the transfer charging assembly.
Transfer separation claw	9	Are there traces of the separation claws in the images?	YES	Increase the setting of ADJUST>HV-SP>HV-SP in service mode; however, keep in mind that too high a setting can cause image distortion.

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Cause	Step	Checks	Yes/No	Action
Photosensitive drum	10	Are there scratches in the peripheral direction of the photosensitive surface?	NO	Replace the photosensitive drum. If scratches are found, remove the cause. Check the cleaning blade for damage by the photosensitive drum.
Fixing assembly	11	Are there scratches in the peripheral direction of the fixing upper roller?	YES	· Replace the fixing upper roller. · Check the cleaning belt take-up mechanism. · Check the position of the fixing separation claw and the separation guide. · Check the fixing blade for damage.
	12	Are there scratches and dents in the axial direction of the fixing roller (upper, lower)?	YES	Replace the fixing roller.
	13	Is there a fault in the fixing oil applying assembly, oil hose, oil filter, oil pump, and oil removing blade?	YES	Remove the cause of the fault, and replace the part.
			NO	Check the inlet to the fixing assembly for dirt. If the problem is noted on the trailing edge of the image only, replace the fixing roller.
Optical path	14	Clean the standard white plate, scanning lamp, and reflecting plate, and mirror. Is the problem corrected?	YES	End.
			NO	Clean the surface of the CCD with a blower brush. If the problem is not corrected, replace the CCD unit.

Caution:

Be sure to adjust the CCD after replacing the scanning lamp, mirror, CCD, or any other optical part.

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6 The copy has white lines.

Cause	Step	Checks	Yes/No	Action
----------	1	Clean the charging assembly, dust-proofing glass, reflecting mirror, and lens. Is the problem corrected?	YES	End.
----------	2	Generate a halftone test print (TYPE=5). Is the problem noted?	NO	Go to step 17.
----------	3	Generate a horizontal stripe test print (TYPE=10). Is the problem noted in a specific color of the copy image?	YES	Go to step 9.
Fixing assembly	4	Clean the fixing assembly inlet guide (upper, lower). Is the problem corrected?	YES	End.
	5	Are there scratches and dents in the peripheral direction of the fixing roller (upper, lower)?	YES	Remove the cause of the scratches, and replace the fixing roller.
	6	Is there a fault in the cleaning belt take-up mechanism or cleaning performance?	YES	Remove the cause of the fault, and replace the part.
	7	Is there a fault on the fixing separation claw or the separation guide?	YES	Clean or replace the part.
	8	Are there scratches or dents in the oil removing blade?	YES	Clean or replace the part.
Developing assembly	9	Is the edge of the blade of the developing assembly for the color in which white lines are found faulty?	YES	Clean or replace the blade.
Cleaner lubricant	10	Did the problem occur at time of installation or replacement of the photosensitive drum?	YES	The cleaner lubricant may be suspected. See the notes on the use of cleaner lubricant (Caution).
Dust-proofing glass	11	Clean the dust-proofing glass of the laser exposure system. Is the problem corrected?	YES	End.
Transfer charging assembly	12	Is the transfer blade or the transfer blade protective sheet warped or faulty?	YES	Correct the warping of the transfer blade. If the part is soiled with toner, clean it with a blower brush.
Separation assembly	13	Clean the separation charging assembly. Is the problem corrected?	YES	End.
	14	Are the operation and the position of operation of the transfer separation claws normal?	NO	Clean the transfer separation claws, and correct as necessary the position of the claws.

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Cause	Step	Checks	Yes/No	Action
Photosensitive drum	15	Are there scratches in the peripheral direction of the photosensitive drum?	NO	Clean the photosensitive drum with a cloth coated with toner. If the scratches still remain, replace the photosensitive drum.
Copy paper	16	When copy paper wraps around the transfer drum, is it in contact with the transfer cleaning brush, polishing roller, or the like?	YES	Correct the position of any part that is in contact.
Optical path	17	Clean the standard white plate, scanning lamp, reflecting plate, and mirror. Is the problem corrected?	YES	End.
CCD, standard white plate (dirt, scratches)			NO	Try the following: · Change the setting of ADJUST>ADJ-XY>ADJ-S in service mode to change the point of shading. · Replace the standard white plate. · Replace the CCD unit.

Caution:

· Be sure to adjust the CCD if you have replaced the scanning lamp, mirror, CCD, or any other optical part.

When Using Cleaner Lubricant

Before detaching the cap, shake the cleaner lubricant bottle well. Be sure to apply the lubricant evenly along the cleaning blade. If uneven, its lubricating ingredients can slip under the cleaning blade, adhere to the photosensitive drum, and cause vertical white lines in copy images.

If such a problem is noted,

1) Make 10 solid black copies in Bk mono color.
   · This step alone may correct the problem.
2) Remove the photosensitive drum, and coat a flannel cloth with black toner; then, wipe the surface of the drum, and then mount the photosensitive drum.
   · This step will remove the lubricating ingredient adhering to the surface of the photosensitive drum.

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7 The copy has lines/is foggy (horizontal).

Cause	Step	Checks	Yes/No	Action
----------	1	Clean the primary charging assembly, dust-proofing glass, reflecting mirror, and lens. Is the problem corrected?	YES	End.
----------	2	Generate a halftone test print (TYPE=5). Is the problem noted?	NO	Go to step 4.
Photosensitive drum	3	Is the problem noted at the same position on A3 copies made in continuous mode but noted at different positions if copies are made at intervals?	YES	The photosensitive drum has memory. Find out the cause of the memory, and remove it; then, replace it.
			NO	See the detailed description of horizontal lines on the next page.
Power supply voltage, scanning lamp regulator	4	Does the scanning lamp flicker?	YES	1. Check the power supply voltage for fluctuations. Be sure to connect the copier to an exclusive outlet. 2. Check the scanning lamp and lamp regulator.
Original exposure system, CCD			NO	Check the No. 1/2 mirror base for wobbling. Check the contact between CCD and CCD driver.

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· Details of Horizontal Lines

<table>
<tr><th>No.</th><th>Color/location (A3)</th><th>Interval (mm)</th><th>Cause</th><th>Action</th></tr>
<tr><td>1</td><td>All colors, entire surface</td><td>0.5</td><td>The mirror or the like may be rocked by vibration of the laser scanner motor. The reflecting plate of the polygon mirror may be soiled or scratched.</td><td>Check to see if the bending mirror assembly is mounted properly.
· Check the rubber dampers on both ends of the mirror holder.
· Check to see if the mirror retaining spring is set properly.
If no error is found, replace the laser scanner unit.</td></tr>
<tr><td>2</td><td>M:
· Near 160 mm from the leading edge and thereafter
· Near 105 mm from the leading edge and thereafter
C:
· Near 105 mm from the leading edge and thereafter
· Near 50 mm from the leading edge and thereafter
Y:
· Near 50 mm from the leading edge and thereafter
· Near 50 mm from the leading edge and thereafter
Bk:
· Near 150 mm from the leading edge and thereafter
· Near 150 mm from the leading edge and thereafter</td><td>0.9</td><td>The impact of the following is transmitted to the drum and bending mirror:
· When the butting rolls of the developing assembly come into contact with the butting block.
· When the developing clutch turns on.</td><td>· Replace the rubber dampers on both ends of the mirror holder.
· Check to see if the mirror retaining spring is mounted properly.
· Tighten the fixing screw and the stepped screw of the photosensitive drum unit fully.
· Tighten the mounting screws on the developing drive unit and the support plate of the copier rear side plate.
· Check the gap between the butting roll and the butting plate (a of the following):
<table><tr><th></th><th>a (mm)</th></tr><tr><td>M</td><td>5.5 ± 1.0</td></tr><tr><td>C</td><td>6.5 ± 1.0</td></tr><tr><td>Y</td><td>5.0 ± 1.0</td></tr><tr><td>Bk</td><td>5.5 ± 1.0</td></tr></table></td></tr>
<tr><td>3</td><td>Specific color, entire surface</td><td>42.8</td><td>The developing cylinder has scratches, or the developing cylinder drive gear has a fault.</td><td>· Check the developing cylinder for scratches and fault.
· Clean the teeth of the developing cylinder drive gear.</td></tr>
</table>

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No.	Color/location (A3)	Interval (mm)	Cause	Action
4	M: · 185 mm from the leading edge and thereafter to the end C: · 135 mm from the leading edge	38 2.7	The attraction roller has a fault: · The engagement of the attraction roller drive gear is not proper. · The attraction roller has wear, deformation, scratches, cracks, vibration.	· Clean the teeth of the gear, and apply grease. · Clean the surface of the roller with alcohol. If the problem is not corrected, replace the part.
5	All colors, 260 mm from the leading edge to 315 mm	-	The impact occurring when the transfer blade hits the connecting plate is transmitted to the drum and the bending mirror.	Check to see if the transfer blade is mounted correctly.
7	All colors, 199 mm from the leading edge	-	Electrical interference between the fixing roller and the separation static eliminator causes black lines.	Decrease the setting of ADJUST>HV-SP>HV-SP in service mode.
8	Non-specific color, non-specific position	-	A screw used to mount the drum motor assembly to the copier's rear side plate is loose, letting the drum shaft to tilt and, consequently, causing wobbling when the photosensitive drum rotates.	Using the drum shaft positioning tool (FY9-3045-00), mount the drum motor assembly once again.

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8 The copy has white spots (horizontal).

Cause	Step	Checks	Yes/No	Action
Mirror base rail, original exposure system cable	1	Generate a halftone test print (TYPE=5). Is the problem noted?	NO	· Clean the rail of the mirror base. · Check the cable of the original scanning system.
Developing assembly	2	Is the problem noted in a specific color only?	YES	Check the developing cylinder of the color for which the problem is noted.
Primary charging assembly, transfer charging assembly	3	Is the problem noted at the same position on copies made in continuous mode, but at different positions on copies made at intervals?	NO	1. Check the primary charging assembly and the transfer charging assembly for leakage. 2. Go to step 7.
Copy paper	4	Is the copy paper moist? Try copy paper fresh out of package. Is the problem corrected?	YES	Replace the paper. Advise the user on the correct method of storage.
Photosensitive drum	5	Is there a fault in the flange or the drive gear of the photosensitive drum?	YES	Replace the photosensitive drum.
Transfer charging assembly	6	Clean the transfer blade with a blower brush. Is the problem corrected?	YES	End.
		Is the transfer blade or the transfer blade protective sheet warped or bent?	YES	Replace the transfer charging assembly.
Transfer drum sheet	7	Are there scratches or dents in the transfer drum sheet?	YES	Replace the transfer drum sheet. · If scratches are found, be sure to find out its cause.
Attraction	8	Is copy paper in even contact with the transfer drum sheet? Make a check using FUNCTION>ATTRACT>ATT-ON in service mode.	NO	See 48. "Attraction fails."
Transfer drum fixing roller			YES	· Check the transfer drum for wobbling. · Check the fixing roller (upper, lower) for deformation.

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9 The copy has white spots.

Cause	Step	Checks	Yes/No	Action
----------	1	Is there a lump of toner in the middle of a spot?	YES	Go to step 5.
Developing assembly	2	Is the problem noted in all colors?	NO	Check the developing assembly and the developing cylinder for which the problem is noted; if a fault is found, replace it.
Photosensitive drum	3	Is the problem noted at the same position on all copies made in continuous mode, but at different positions on copies made at intervals?	YES	Check the photosensitive drum for scratches; if a fault is found, replace it.
Transfer drum	4	Is the fault noted at the same position?	YES	Check the transfer drum sheet for scratches and deformation; if a fault is found, replace it.
Fixing roller	5	Is the problem noted at intervals of about 180 mm?	YES	Check the fixing roller for scratches and deformation.
Lump of waste toner or developer	6	Identify the lump as to whether it is of developer or waste toner by color. · if gray (mixed color), it is of waste toner. · if Y, M, C, or Bk, it is of developer. Is the lump made of waste toner?	YES	Check the seal at the end of the cleaning blade of the photosensitive drum. Check the end of the cylinder of the developing assembly for soiling.
			NO	· Replace the developer. · Replace the developing assembly.

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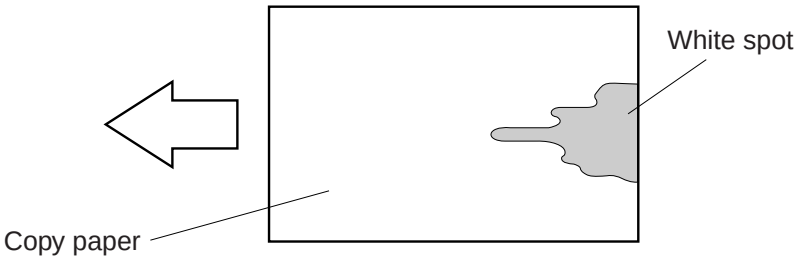
10 The copy has a white spot (middle of trailing edge).

A white spot in the middle of the trailing edge of a copy usually takes the following form:



· Principles behind the Fault

This type of fault mostly occurs when copy paper is wavy. If its leading edge is not attracted evenly, its trailing edge will lose contact with the drum in an increased degree.

This fault tends to occur when copying on the second side of a double-sided copy or in a high humidity environment.

Cause	Step	Checks	Yes/No	Action
----------	1	Is the problem noted particularly on thick paper?	YES	Go to step 7.
----------	2	Is the copy paper inside the cassette wavy because of humidity?	YES	Replace the copy paper.
Service mode ADJUST>MISC> ATT-RTN (attraction additional rotation mode)	3	Is the problem noted in single-sided copying mode only or when copying on the first side of a double-sided copy?	YES	Set ADJUST>MISC>ATT-RTN3 in service mode to '1'.
	4	Is the problem noted on the second side of a double-sided copy only?	YES	Set ADJUST>MISC>ATT-RTN4 in service mode to '1'.
	5	Does the problem occur in single-sided copying or on the first and second sides of a double-sided copy?	YES	Set ADJUST>MISC>ATT-RTN3 and ATT-RTN4 in service mode to '1'.
ADJUST>HV-ATT>HV-ATT in service mode (attraction high-voltage output adjustment mode)	6	Decrease the setting of ADJUST>HV-ATT>ATT-N1 or ATT-N2 in service mode. Is the problem corrected? ATT-N1: for plain paper, single-sided copying or for copying on the 1st side of a double-sided copy ATT-N2: for copying on the 2nd side of a double-sided copy	YES	End. Settings: -5 to +5 Unit:2 µA

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Cause	Step	Checks	Yes/No	Action
ADJUST>HV-ATT>HV-ATT in service mode (attraction high-voltage output adjustment mode)	7	Decrease the setting of ATT-xx according to the type of paper suffering from the problem. Is the problem corrected? ATT-T1: for thick paper, single-sided copying or copying on the 1st side of a double-sided copy ATT-T2: for thick paper, copying on the 2nd side of a double-sided copy ATT-OHP: for copying on transparencies ATT-S1: for copying on special paper 1 ATT-S2: for copying on special paper 2 ATT-S3: for copying on special paper 3	YES	End. Settings: -5 to +5 Unit:2 μA
			NO	Check the attraction high-voltage system and the internal/external static eliminator high-voltage system; or, replace the attraction push-on roller unit.

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11 The copy has a soiled image/back.

Cause	Step	Checks	Yes/No	Action
----------	1	Is the image soiled only after a double-sided copy has been made?	YES	Go to step 11.
Image margin	2	Is the image margin within specification?	NO	Make adjustments according to II. "Standards and Adjustments."
Primary charging assembly, developing bias, laser power	3	Is the image margin foggy?	YES	Check the primary charging assembly for soiling; check the developing bias and laser power.
Cleaning	4	Is the cleaning blade of the photosensitive drum cleaner assembly locked in position?	NO	Lock and secure the cleaning blade in position.
	5	Is paper or foreign matter stuck on the cleaning blade of the photosensitive drum cleaner assembly?	YES	Remove the foreign matter, and clean the cleaning blade and the outside the cleaning blade.
	6	Is there deformation or scratches on the edge of the cleaning blade? Feel the edge of the cleaning blade (with your finger) for deformation and presence/absence of scratches.	YES	If deformation or scratches are found, remove the cause, and replace the cleaning blade.
	7	Is there a buildup of waste toner at the bottom of the scoop-up sheet?	YES	Clean it.
	8	Is there warping or bending on the scoop-up sheet (2 pc.) of the photosensitive drum cleaning assembly?	YES	Replace the scoop-up sheet.
No. 2 cleaning blade	9	Is the No. 2 cleaning blade in firm contact with the photosensitive drum?	NO	· Check the blade. · Mount the No. 2 cleaning blade properly.
Side scraper	10	Is the edges of paper soiled on the photosensitive drum?	YES	Replace the side scraper.
Attraction roller	11	Is the attraction roller soiled? Or, are there scratches, or any other fault on each roller?	YES	Clean the attraction roller, scraper, and the area around them; if a fault is found, replace the scraper.

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Cause	Step	Checks	Yes/No	Action
Developing assembly, cleaner assembly, transfer drum cleaner assembly	12	Is the transfer drum sheet soiled with toner or fixing oil?	YES	1. Check the photosensitive drum cleaning assembly or the No. 2 cleaning assembly (ends) for leakage of toner. 2. Is the transfer drum cleaner locked/ unlocked properly, and does the brush rotate?
Fixing assembly	13	Is the take-up mechanism of the cleaning belt for the fixing assembly normal? Is the cleaning performance of the upper/lower roller normal?	NO	1. Check the take-up mechanism of the cleaning belt. 2. Clean the upper roller and the lower roller. 3. Clean the oil blade. 4. Clean the contact face used for applying oil. 5. Clean the fixing assembly guide. 6. Clean the oil removing blade.
Delivery assembly, external static eliminator/ separation charging assembly			YES	1. Clean the delivery roller and the external static eliminator/separation charging assembly. 2. If the separation claw is soiled with toner, change the stroke of the transfer sheet push-up solenoid.

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12 The copy has a fixing fault.

Cause	Step	Checks	Yes/No	Action
Fixing upper/ lower roller	1	Is the problem noted in paper feeding direction?	YES	1. Check the upper roller and the lower roller of the fixing assembly for scratches. 2. Check the separation claws to see if they are mounted properly.
Fixing heater	2	Does the heater (H1, H2) turn on immediately after power-on?	NO	See 50. "The fixing Heater fails to turn on."
Oil applying mechanism	3	Is the upper roller of the fixing assembly coated with a uniform layer of oil?	NO	· Check the oil applying assembly. · Check the mechanism used to supply oil from the oil case.
Insulating bush, bearing	4	Are the insulating bush and the bearing mounted properly?	NO	Mount the parts properly.
Nip	5	Is the nip of the upper roller and the lower roller of the fixing assembly as indicated?	NO	Adjust the nip.
Thermistor			YES	Check the thermistor for a fault.

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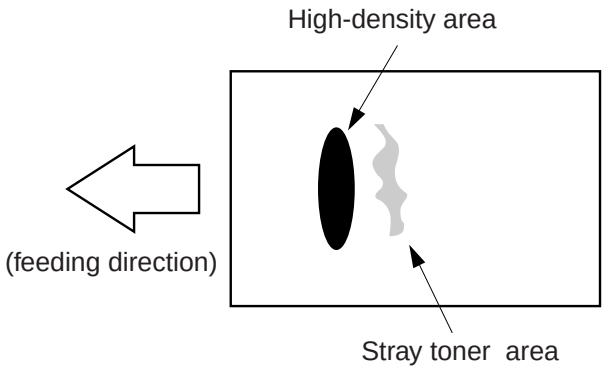
13 The copy has stray toner (from fixing).

In this fault, stray toner is found immediately after a high-density area of an image (in relation to feeding direction) and in the form of black dots.



Cause	Step	Checks	Yes/No	Action
ADJUST>HV-SP (service mode)	1	Decrease the setting of SPxx for the mode and the type of paper in question using ADJUST>HV-SP in service mode. Is the problem corrected? SP-N1 for plain paper, single-sided copying and copying on the 1st side of a double-sided copy SP-N2 for plain paper, copying on the 2nd side of a double-sided copy SP-T1 for thick paper, single-sided copying and copying on the 1st side of a double-sided copy SP-T2 for thick paper, copying on the 2nd side of a double-sided copy SP-S1-1 for special paper 1, single-sided copying and copying on the 1st side of a double-sided copy SP-S2-1 for special paper 2, single-sided copying and copying on the 1st side of a double-side copy SP-OHP for transparencies	YES	End. Settings: -6 to 0 Unit: 50 µA

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Cause	Step	Checks	Yes/No	Action
ADJUST>HV-SP>HV-SP	2	Increase the setting of SP-OFST in ADJUST>HV-SP>SP-OFST in service mode. Is the problem corrected?	YES	End. Settings: -6 to 0 Unit: 50 µA
Toner (excess amount)	3	Check the latent image formation system and the developing system. Is there a fault?	YES	Correct the fault.
			NO	Decrease the copy density using the Copy Density key.

14 The copy is blank.

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a horizontal stripe test print (TYPE=10). Is the image normal?	YES	Check the wiring of the following PCBs; if normal, try replacement: · analog processor PCB · IP-MAIN PCB · CCD unit
Potential control fault	2	Execute FUNCTION>DPC>DPC in service mode. Is the copy image after execution normal?	YES	End.
Transfer charging assembly	3	Is the transfer blade locking lever of the transfer charging assembly in the locked position?	NO	Set the lever to the locked position.
	4	Is the transfer charging assembly securely fitted?	NO	Fit the charging assembly.
Developing assembly (faulty locking)	5	Is the developing assembly locked to the photosensitive drum during development?	NO	See 43. "The developing assembly fails to be locked in position."
Developing cylinder clutch	6	Is the developing cylinder rotating during development?	NO	Check the developing cylinder clutch.
Transfer high-voltage	7	Open the front right cover during development, and remove the photosensitive drum unit. Is the image on the photosensitive drum normal?	YES	· Check the transfer high-voltage system. · Check the high-voltage cable from the HVT PCB to the transfer charging assembly: if a fault is found, replace the high-voltage cable; if normal, replace the HVT-DC PCB.
			NO	· Check the developing bias system. · Try replacing the developing bias PCB.

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15 The copy is solid black.

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a horizontal stripe test print (TYPE=10). Is the image normal?	YES	Go to step 5.
Potential control	2	Execute FUNCTION>DPC>DPC in service mode. Is the copy image normal?	YES	End.
Cleaning blade	3	Is the photosensitive drum cleaned?	NO	· Check the locking lever of the cleaning blade. · Check the temperature control mechanism of the photosensitive drum and SSR.
Output system (primary charging, grid bias)	4	Is there electrical continuity between both connectors of the high-voltage cord connected to the primary charging assembly?	NO	Replace the high-voltage cord.
			YES	· Check the output system of the primary charging assembly and the grid bias · Try replacing the HVT-DC PCB.
Original exposure	5	Does the scanning lamp turn on?	NO	See 42. "The scanning lamp fails to turn on."
Anti-counterfeit mechanism	6	Does the problem occur when a bank note is copied? Or, does it occur when an original identical to a bank note is copied?	YES	The anti-counterfeit mechanism turned on. Advise the user that copying bank notes is illegal.
Original exposure system	7	Is the copyboard glass riding over an object?	YES	Remove the object.
	8	Clean the original scanning lamp, reflecting plate, No. 1, 2, and 3 mirrors, standard white plate, and copyboard glass, and execute FUNCTION>CCD>CCD-ADJ in service mode. Is the problem corrected?	YES	End.
Connectors, wiring	9	Are the connectors between the following PCBs and the wiring between connectors normal? · IP-MAIN PCB · analog processor PCB · CCD driver PCB	NO	Make connections properly.
DC power supply	10	Is there DC power present between the following terminals on the analog processor PCB? J2100-7 (+) -6 (-): +5 V J2100-4 (+) -3 (-): +8.8 V J2100-2 (+) -1 (-): +15 V	NO	See 40. "DC power is absent."
CCD unit analog processor PCB IP-MAIN PCB			YES	Try replacing the following in turns: · CCD unit · analog processor PCB · IP-MAIN PCB

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16 The copy has color displacement.

Cause	Step	Checks	Yes/No	Action
Side A sensor, side B sensor	1	Clean the side A sensor and the side B sensor (PS2, PS3) of the transfer drum. Is the problem corrected?	YES	End.
Drum gear	2	Is the gear of the photosensitive drum or the gear of the transfer drum worn or loosened?	YES	Replace the gear.
Transfer drum (gap)	3	Is there a gap around the ring frond at the front and the rear of the transfer drum or around the connecting plate?	YES	Mount the transfer drum properly.
Flywheel (gap)	4	Is there a gap around the flywheel?	YES	Tighten the fixing screws.
Drum (dirt on end)	5	Clean the ends and the spacer rubber of the photosensitive drum and the transfer drum. Is the problem corrected?	YES	End.
Transfer drum sheet	6	Are there dents in or peeling of the transfer drum sheet?	YES	Attach the transfer drum sheet properly.
Push-on brush	7	Is the push-on brush of the transfer drum sheet deformed?	YES	Replace the push-on brush.
Attraction	8	Is copy paper in even contact from attraction to transfer?	NO	See 48. "Attraction fails."
			YES	Check the following items according to color and position.

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No.	Color/location (A3)	Cause	Action
1	All colors; 0 to 20 mm from leading edge	The black text recognition mechanism has failed because of vibration of the No. 1/No. 2 mirror mount.	1. Increase the setting of ADJUST>ADJ-XY>ADJ-J in service mode. (See Reference.) 2. Increase the tension of the timing belt of the original scanner motor.
2	M: near 105 or 160 mm from the leading edge C: near 50 or 105 mm from the leading edge Y: near 50 mm from the lading edge K: near 150 mm from the leading edge	The impact occurring when the developing assembly is locked in position rocks the No. 1/No. 2 mirror base, displacing the latent image on the photosensitive drum.	Check the developing roll and the developing assembly locking assembly. Check the CCD and the CCD base. Check the contact between each mirror base and the rail.
3	All colors; 390 mm to 410 mm from the leading edge	The scanner cable is twisted.	Remove the screws used to keep the No. 1 mirror base to the cable; then, move the No. 2 mirror base slowly back and forth. Apply lubricant (CK-0551) to the scanner cable.
4	Non-specific color; non-specific position	The No. 1/No. 2 mirror base vibrates because of dust, or the scanner cable is frayed.	Clean the scanner cable. Replace the scanner cable.

Reference:

ADJ-J in service mode is designed to change the distance (14mm) between the scanner start position and the leading edge of an original, used to determine the time needed to accelerate the scanner before it reaches a specific speed.

If too short, displacement along the leading edge will occur; you may increase the setting, however, as much as you want before such displacement starts to occur.

Keep in mind that, if the setting exceeds 190, scanning for the second and subsequent colors will be out of keeping, causing error images.

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17 The copy has uneven density (A3, center).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a halftone test print using TYPE=5 (DENS-M/C/Y/K=25, TXPH=0), and make checks.		
Photosensitive drum shaft	2	Is the screw on the core fixing tab of the photosensitive drum loose?	YES	Tighten the screw.
	3	Is the fixing screw on the flywheel loose?	YES	Tighten the fixing screw.
	4	Is the flywheel mounted at an angle?	YES	Mount the flywheel properly.
Transfer drum assembly	5	Is the 300T gear of the transfer drum soiled or damaged?	YES	Clean or replace the transfer drum assembly.
	6	Is there deformation, damage or caking of toner on the positioning rubber ring (FB2-0524), transfer drum sheet connecting plate, transfer drum frame, or transfer sheet?	YES	Clean or replace the part.
	7	Is there deformation on the transfer blade/attraction brush?	YES	Replace the part.
	8	Is the end of the transfer ring (FB2-0584) bent?	YES	Replace the part.
Attraction push-on roller unit	9	Is there deformation/warping on the attraction push-on roll unit?	YES	Mount the part properly, or replace it.
	10	Is the attraction roller moved/ rotated smoothly?	NO	Replace the roller.
			YES	Check the scraper for deformation; if necessary, replace it.

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18 The copy has lines (1st copy only; near 175 mm from the leading edge; A3).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a halftone test print using TYPE=5 (DENS-M/C/Y/K=25, TXPH=0).		
Transfer drum assembly	2	Is the end of the roller spacer bent?	YES	Replace the spacer.
Attraction roll	3	Is the attraction roller soiled?	YES	Clean the attraction roller. Replace the scraper.
Photosensitive drum shaft	4	Is the screw on the core fixing roll of the photosensitive drum loose?	YES	Tighten the screw.
Flywheel	5	Is the fixing screw on the flywheel loose?	YES	Tighten the fixing screw.
			NO	Check to see if the flywheel is mounted properly.

19 The copy has color displacement (magenta).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a grid test print (TYPE=6), and make a check.		
Registration roller clutch (CL9)	2	Is the mechanism used to release the registration roller operating normally?	NO	Apply oil to the spring clutch, or replace it.
Attraction roller	3	Is the attraction roller soiled?	YES	Clean the attraction roller. Replace the scraper.
Photosensitive drum shaft	4	Is the screw on the core fixing roll of the photosensitive drum loose?	YES	Tighten the screws.
Flywheel	5	Is the fixing screw on the flywheel lose?	YES	Tighten the fixing screw.
	6	Is the flywheel mounted at an angle?	YES	Mount the flywheel properly.
			NO	Set ADJUST>MISC>ATT-RTN3, ATT-RTN4 to '1'.

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20 The copy has uneven density (magenta).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a halftone test print using TYPE=5 (DENS-M/C/Y/K=25, TXPH=0).		
Transfer frame	2	With the transfer drum frame locked in position, is there a gap around the frame?	YES	Check the upper locking member (FB2-0609) of the transfer frame for deformation, damage, and wrong orientation. Further, check the mounting screw for breakage.
	3	Is the holder slide (FB2-0601) on the copier's front side plate damaged or displaced?	YES	Mount the slide properly, or replace it.
Registration roller clutch (CL9)	4	Is the mechanism used to release the registration roller operating normally?	NO	Replace the mechanism.
Photosensitive drum shaft	5	Is the screw on the core fixing roll of the photosensitive drum loose?	YES	Tighten the screw.
Flywheel	6	Is the fixing screw on the flywheel lose?	YES	Tighten the fixing screw.
	7	Is the flywheel mounted at an angle?	YES	Mount the flywheel properly.
			NO	Set ADJUST>MISC>ATT-RTN3, ATT-RTN4 in service mode to '1'.

21 The copy has color displacement (entire area; cyan; side A on transfer drum only).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a grid test print (TYPE=6), and make a check.		
Attraction roller unit	2	Is the attraction roller moved/ rotated smoothly?	NO	Replace the roller.
			YES	Check the scraper for deformation, and replace it if necessary.

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22 The copy has color displacement (entire area; random).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a grid test print (TYPE=6), and make a check.		
Photosensitive drum shaft	2	Is the screw on the core fixing roll of the photosensitive drum loose?	YES	Tighten the screw.
Flywheel	3	Is the fixing screw of the flywheel loose?	YES	Tighten the fixing screw.
	4	Is the flywheel mounted at an angle?	YES	Mount the flywheel properly.
Photosensitive drum drive assembly			NO	Check the 140T gear and the 108/20T gear of the photosensitive drum drive assembly for damage and dirt.

23 The copy has uneven density (at intervals of 1.8 mm).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a halftone test print using TYPE=5 (DENS-M/C/Y/K=25, TXPH=0), and make a check.		
Photosensitive drum shaft	2	Is the screw on the core fixing roll of the photosensitive drum loose?	YES	Tighten the screw.
Transfer drum assembly	3	Is the return spring of the jam removal handle of the transfer drum displaced?	YES	Mount the handle properly.
	4	Is the separation charging assembly mounted to the transfer drum with a screw other than specified (M4x6; binding)?	YES	Use a specified screw.
	5	Is there damge, dents, or caking of toner on the photosensitive drum or the drum flange?	YES	Clean, or replace the part.
	6	Is there dirt or damge on the 300T gear of the transfer drum?	YES	Clean, or replace the part.
	7	Is there deformation, damge, or caking of toner on the positioning rubber ring (FB2-0524), transfer drum sheet connecting plate, transfer drum frame, or transfer sheet?	YES	Clean, or replace the part.
			NO	Check the transfer blade/ attraction brush for deformation; replace any deformed part.

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24 The copy is uneven (random)

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a halftone print using TYPE=5 (DENS-M/C/Y/K=25, TXPH=0).		
Photosensitive drum shaft	2	Is the screw on the core fixing roll of the photosensitive drum loose?	YES	Tighten the screw.
	3	Slide the photosensitive drum frame unit about 50 mm out of the copier. Is there a discrepancy of 2 mm or more between the drum shaft and the photosensitive drum flange hole?	YES	Correct the drum shaft position using the drum shaft positioning tool (FY9-3045).
	4	Can the photosensitive drum unit be slid in and out of the copier smoothly?	NO	Correct the position of the drum motor support plate.
Flywheel	5	Is the fixing screw on the flywheel loose?	YES	Tighten the fixing screw.
	6	Is the flywheel mounted at an angle?	YES	Mount the flywheel properly.
Photosensitive drum frame unit	7	Are the two fixing pins used to secure the photosensitive drum frame unit to the copier loose?	YES	Tighten the fixing pins.
	8	Is the front side plate of the photosensitive drum frame unit mounted to the copier's front side plate loose? Or, are the three screws loose?	YES	Tighten the screws.
Photosensitive drum assembly	9	Is there damage, dents, or caking of toner on the photosensitive drum or the drum flange?	YES	Clean or replace the part.
Photosensitive drum drive assembly	10	Is there dirt or damage to the 300T gear (FS5-0651) on the photosensitive drum?	YES	Clean or replace the part.
			NO	Check the 140T gear and the 108/20T gear of the photosensitive drum drive assembly for damage and dirt.

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25 The copy has uneven density (at regular intervals; other than 23 or 24).

Cause	Step	Checks	Yes/No	Action
----------	1	Generate a halftone test print using TYPE=5 (DNES-M/C/Y/K=25, TXPH=0), and make a check.		
Photosensitive drum shaft	2	Is the screw on the core fixing roll of the photosensitive drum loose?	YES	Tighten the screw.
Flywheel	3	Is the fixing screw on the flywheel loose?	YES	Tighten the fixing screw.
Photosensitive drum drive assembly	4	Is the flywheel mounted at an angle?	YES	Mount the flywheel properly.
			NO	Check the 140T gear and the 108/20T gear of the photosensitive drum drive assembly for damage and dirt.

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IV. TROUBLESHOOTING MALFUNCTIONS

A. Troubleshooting Malfunctions

1	E000/E004

· See the detail code of E000 in service mode (COPIER>DISPLAY>ERR).

a. E000=0101, 0201, 0102, 0202, 0103, 0203, 0104, 0204, E004=0101, 0201

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>----------</td><td>1</td><td>Clear E000/E004 (Note). Is E000 indicated immediately after the power switch is turned on?</td><td>NO</td><td>Go to step 4.</td></tr>
<tr><td>Fixing thermistor (THM1 through THM4; short circuit)</td><td>2</td><td>Turn off the power switch, and disconnect the connector J1004 of the DC driver PCB. Measure the resistance between a and b of the following table. Is it 1 KΩ or less?
<table>
<tr><th>Code</th><th>a</th><th>b</th></tr>
<tr><td>0101</td><td>J1004-A4</td><td>J1004-A3</td></tr>
<tr><td>0102</td><td>J1004-A4</td><td>J1004-A3</td></tr>
<tr><td>0201</td><td>J1004-A2</td><td>J1004-A1</td></tr>
<tr><td>0202</td><td>J1004-A2</td><td>J1004-A1</td></tr>
<tr><td>0103</td><td>J1004-A4</td><td>J1004-A3</td></tr>
<tr><td></td><td>J1004-B8</td><td>J1004-B7</td></tr>
<tr><td>0203</td><td>J1004-A2
J1004-B10</td><td>J1004-A1
J1004-B9</td></tr>
<tr><td>0104</td><td>J1004-B8</td><td>J1004-B7</td></tr>
<tr><td>0204</td><td>J1004-B10</td><td>J1004-B9</td></tr>
</table></td><td>YES</td><td>Check the wiring from J1004 to the fixing thermistor in question; if normal, replace the fixing thermistor.</td></tr>
<tr><td>24 V for AC relay drive</td><td>3</td><td>Is 24 V present between J939-2 and -3 on the DC fuse PCB?</td><td>NO</td><td>Check the DC fuse (FU925) and the left front door switch, transfer unit lever switch, and delivery door switch.</td></tr>
<tr><td>SSR1 (short circuit)</td><td rowspan="2">4</td><td rowspan="2">Replace SSR1. Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td>DC driver PCB, CPU PCB</td><td>NO</td><td>Replace the DC driver PCB or the CPU PCB.</td></tr>
</table>

Note: To clear E000/E004,
1) Start service mode, and select COPIER>FUNCTION>CLEAR>ERR.
2) Press the OK key.
3) Turn off and then on the power switch.

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b. E000=0103, 0203, 0105, 0205, 0120, 0221, 0131, 0231, 0140, 0240, 0150, 0250

Cause	Step	Checks	Yes/No	Action
----------	1	Clear E000, and turn on the power switch. Does the fixing heater turn on when the power switch is turned on? · Make a visual check. Be user to turn off the power switch immediately after a check.	NO	See "The fixing heater fails to turn on."
Fixing thermistor (HTM1 through THM4; short circuit)	2	Slide out the fixing unit, and let the fixing roller cool. Then, set the fixing unit, and turn on the power switch. Start service mode, and select COPIER>DISPLAY>ANALOG. Does the reading of the temperature of the following thermistors (THM1 through THM4) increase gradually? FIX-UC: THM1 (fixing upper roller center) FIX-LC: THM3 (fixing lower roller center) FIX-UE: THM2 (fixing upper roller ends) FIX-LE: THM4 (fixing lower roller ends)	NO	Replace the fixing thermistor in question properly.
Fixing thermistor (THM1 through THM4; mounting)	3	Is each fixing thermistor in even contact with the fixing roller?	NO	Mount the fixing thermistor in question properly.
Fixing thermistors (THM1 through THM4; soiling)	4	Clean the area of contact between each fixing thermistor and the fixing roller. Is the problem corrected?	YES	End.
Operating environment	5	Does the problem occur only when the copier is turned on first time (in the morning)?	YES	· Inform the user that the environment is out of specification. · Instruct the user to wait until the room becomes warm before turning on the copier.
SSR1	6	Replace SSR1. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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2 E005

Cause	Step	Checks	Yes/No	Action
Fixing cleaning belt (upper, lower)	1	Is the cleaning belt almost used up?	YES	Replace the fixing cleaning belt.
Fixing cleaning belt counter	2	After replacing the fixing cleaning belt, has the cleaning belt counter been cleared in service mode (COPIER>COUNTER>MISC>FIX-WEB)?	NO	Clear the cleaning belt counter in service mode.
Sensor lever (position)	3	Is the lever of the fixing cleaning belt length sensor as follows? for the fixing upper cleaning belt, inside of the belt for the fixing lower cleaning belt, outside of the belt	NO	Mount the sensor lever properly.
Fixing cleaning belt length sensor (upper, PS11; lower, PS67)	4	Replace the fixing cleaning belt length sensor. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

3 E008

Cause	Step	Checks	Yes/No	Action
Fixing oil pump driver PCB	1	Replace the fixing oil pump driver PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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4	E010

Cause	Step	Checks	Yes/No	Action
----------	1	Does the main motor rotate during initial rotation?	YES	Go to step 5.
Overload	2	Does the main motor start to but fail to rotate during initial rotation?	YES	Check the main motor drive system for an overload (e.g., photosensitive drum cleaner).
Main motor (M4)	3	Set the meter range to 5 VDC, and measure the voltage between J1026-A3 (+; MNMON) and J1026-A4 (-; GND) on the DC driver PCB. Does it change from about 0 to about 5 V when the power switch is turned off and then on and when the main motor starts to rotate?	YES	Check the wiring from J1026 to the main motor; if normal, replace the main motor.
DC fuse PCB	4	Is 38 V present between J370-1 and -2 of the main motor?	NO	Check the voltage between J937-4 and -1 on the DC fuse PCB; if not 38V, replace the DC fuse PCB.
DC driver PCB, CPU PCB	5	Set the meter range to 5 VDC, and measure the voltage between J1026-A2 (+; MNMRDY) and J1026-A4 (-; GND) on the DC driver PCB. Does it change from about 0 V to about 5 V when the power switch is turned off and then on and the main motor starts to rotate?	YES	Replace the driver PCB or the CPU PCB.
Main motor (M4)			NO	Check the wiring from J1026 to the main motor; if normal, replace the main motor.

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5	E012

Cause	Step	Checks	Yes/No	Action
----------	1	Does the drum motor rotate during initial rotation?	YES	Go to step 5.
Overload	2	Does the drum motor start to but fail to rotate during initial rotation?	YES	Check the photosensitive drum and the transfer drum for overload.
Drum motor (M2)	3	Set the meter range to 5 VDC, and measure the voltage between J1026-A12 (+; DRMON) and J1026-A13 (-; GND) on the DC driver PCB. Does it change from about 0 to about 5 V when the power switch is turned off and then on and the drum motor starts to rotate?	YES	Check the wiring from J1026 to the drum motor; if normal, replace the drum motor.
DC fuse PCB	4	Is there 24 V between J372-1 and -2 of the drum motor?	NO	Check the voltage between J935-1 and -2 on the DC fuse PCB; if not 24 V, replace the DC fuse PCB.
DC driver PCB, CPU PCB	5	Set the meter range to 5 VDC, and measure the voltage between J1026-A3 (+; DRMRDY) and J1026-A13 (-; GND) on the DC drum PCB. Does it change from about 0 to about 5 V when the power switch is turned off and then on and the drum motor starts to rotate?	YES	Replace the DC driver PCB or the CPU PCB.
Drum motor (M2)			NO	Check the wiring from J1026 to the drum motor; if normal, replace the drum motor.

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6 E013

Cause	Step	Checks	Yes/No	Action
Waste toner feedscrew	1	Is the waste toner feedscrew drive gear pushing the waste toner feedscrew lock detecting switch (SW7)?	YES	The feedscrew inside the waste toner pipe may be prevented from rotating. Remove the waste toner pipe, and try turning the feedscrew by and. If it can be turned easily, mount it back once again, and see what happens. If it cannot be turned easily, replace the waste toner pipe, and remove the cause.
Waste toner feedscrew lock detecting switch (SW7)	2	Is the voltage between J1012-A2 (+) and J1012-A1 (-) on the DC driver PCB about 5 V when the switch is pressed and about 0 V when the switch is released?	NO	Replace the switch.
DC driver PCB, CPU PCB			YES	Replace the DC driver PCB or the CPU PCB.

7 E014

Cause	Step	Checks	Yes/No	Action
----------	1	Does the fixing motor rotate at specific timing during copying operation?	YES	Go to step 5.
Fixing roller drive assembly	2	Does the fixing motor start to rotate at specific timing during copying operation?	YES	Check the fixing roller drive system for overload.
Fixing oil application system	3	Is the fixing roller coated with fixing oil?	NO	Check the fixing oil application system (e.g., fixing oil pump).
DC fuse PCB	4	Is 24 V present between J374-1 and -2 of the fixing motor.	NO	Check the voltage between J935-1 and -3 of the DC fuse PCB. If it is not 24 V, replace the DC fuse PCB.
Fixing motor (M5)	5	Set the meter range to 5 VDC, and measure the voltage between J1026-B9 (+; FXMON) and J1026-B10 (-; GND) on the DC driver PCB. Does it change from about 0 to about 5 V when the power switch is turned off and then on and when the fixing motor starts to rotate?	YES	Check the wiring from J1026 to the fixing motor; if normal, replace the fixing motor.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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8 E016

Cause	Step	Checks	Yes/No	Action
Cleaner blade reciprocating motor (M7)	1	Set the meter range to 30 VDC, and measure the voltage between J1028-3 (+; CBRCMA) and J1028-1 (-; CBRCMB) on the DC driver PCB. Does it change from about 0 to about 24 V at specific timing when the Copy Start key is pressed?	YES	Check the wiring from J1028 to the motor; if normal, replace the motor.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

9 E017

Cause	Step	Checks	Yes/No	Action
----------	1	Does the duplexing motor rotate at specific timing during copying?	YES	Go to step 4.
Duplexing unit drive assembly	2	Does the duplexing motor start to rotate at specific timing during copying operation?	YES	Check the duplexing unit for overload.
DC fuse PCB	3	Is there 24 V between J364-1 and -2 of the duplexing motor?	NO	Check the voltage between J934-1 and -8 on the DC fuse PCB; if not 24 V, replace the DC fuse PCB.
Duplexing motor (M14)	4	Set the meter range to 5 VDC, and measure the voltage between J1029-2 (+; DUPMON) and J1029-3 (-; GND) on the DC driver PCB. Does it change from about 0 to about 5 V when the Copy Start key is pressed and the duplexing motor starts to rotate?	YES	Check the wiring from J1029 to the duplexing motor; if normal, replace the duplexing motor.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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10	E020

· Check the detail code of E000 in service mode (COPIER>DISPLAY>ERR).

a. E020=xx00, xx10, xx11, xx12, xx13, xx14, xx15, xx16, xx17, xx20, xx21, xx22, xx23, xx24, xx30, xx31, xx33, xx34, xx40, xx41
(The first two digits indicate color; e.g., xx=01 is Y, 02 is M, 03 is C, 04 is Bk).

Cause	Step	Checks	Yes/No	Action
Backup data	1	Is the setting of COPIER>DISPLAY>DENS in service mode the same as that on the service label?	NO	Enter the setting of ADJUST>DENS once again.
Uneven toner concentration in side developing assembly	2	Execute STIR for the color for which E020 is indicated using service mode (COPIER>FUNCTION>INSTALL). Is the problem corrected?	YES	End.
Developing assembly	3	Replace the developer for the color for which E020 is indicated, and execute COPIER>FUNCTION>INSTALL> INIT in service mode.	YES	End.
Connector, wiring	4	Is the connection of and wiring between the following connectors normal? DC driver PCB Y, M, C, K: J0017 Connectors M: J518 C: J520 Y: 519 K: J522 Developing Assembly (toner concentration sensor) M: J525 C: J527 Y: J526 Black Toner Concentration Sensor K: J529	NO	Correct the connection and wiring.

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Cause	Step	Checks	Yes/No	Action
----------	5	Is E020 indicated for Bk? (Is it E020=04xx?)	YES	Go to step 7.
Toner concentration sensor	6	Replace the toner concentration sensor of the color for which E020 is indicated. Is the problem corrected?	YES	End. · When you have replaced the toner concentration sensor, be sure to replace the developer also.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.
Stray light	7	Is the copier's front cover left open after the transfer unit front cover is removed (i.e., is the black toner concentration sensor subjected to stray light)?	YES	Mount the transfer unit front cover.
Black toner concentration sensor			NO	Replace the black toner concentration sensor. · If you have replaced the toner concentration sensor, be sure to replace the developer also.
Photosensitive drum	8	Replace the photosensitive drum. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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b. E020=xx80, xx81 (The first two digits indicate color; e.g., xx=00 for all colors, 01 for M, 02 for C, 03 for Y, and 04 for Bk.)

Cause	Step	Checks	Yes/No	Action
Photosensitive drum	1	Is the photosensitive drum soiled?	YES	Replace the cleaning blade.
Laser exposure system	2	Is the laser power normal?	NO	Adjust the power. If output is absent, replace the laser unit or the laser driver.
----------	3	Is E020 indicated for Bk? (Is it E020=04xx?)	NO	Go to step 7.
Black toner concentration sensor	4	Is the window of the black toner concentration sensor soiled?	YES	Clean the window.
	5	Execute FUNCTION>INSTALL>INIT-K in service mode. Is E020 indicated once again?	NO	End.
	6	Replace the black developer, and execute INIT-K once again. Is E020 still indicated?	NO	End.
			YES	Check the wiring from the DC driver PCB to the black toner concentration sensor; if normal, replace the black toner concentration sensor.
Y/M/C toner concentration sensor	7	Execute FUNCTION>INSTALL>INIT for the color for which E020 is indicated in service mode. Is E020 indicated once again?	NO	End.
			YES	Check the wiring from the DC driver PCB to the toner concentration sensor; if normal, replace the toner concentration sensor.

Caution:

Be sure to wait until initial rotation has ended before executing service mode. Otherwise, malfunction can occur. (This is not limited to INIT.)

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c. E020=xx50, xx51, xx60, xx61, xx62, xx63, xx64, xx65, xx66, xx70, x71, xx72, xx73, xx74, xx75, xx76
(The first two digits indicate color; e.g., xx=00 for all colors, 01 for M, 02 for C, 03 for Y, and 04 for Bk.)

Cause	Step	Checks	Yes/No	Action
Backup data	1	Is the setting of COPIER>DISPLAY>DENS in service mode identical to the setting recorded on the service label?	NO	Enter the setting of DC-CON newly.
CPU PCB	2	Replace the CPU PCB. Is the problem corrected?	YES	Perform work indicated for the replacement of the CPU PCB.

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d. E020=xx90, xx91, xx92, xx93, xxA0, xxA1, xxA2, xxB0, xxB1, xxB2, xxC0, xxD0, xxE0

Cause	Step	Checks	Yes/No	Action
----------	1	Perform the instructions under "E20 Making a Check" on the next page. Is E020 still indicated?	NO	End.
Toner (uneven concentration inside developing assembly)	2	Execute COPIER>FUNCTION>INSTALL> STIR-M/C/Y/I for the color for which E020 is indicated. Is the problem corrected?	YES	End.
Developer	3	Replace the developer for which E020 is indicated, and execute COPIER>FUNCTION>INSTALL> INIT in service mode. Is the problem corrected?	YES	End. · Check the counter. If the developers of other colors are near the end of life, replace the developers of all colors.
----------	4	Is E020 indicated for Bk? (Is it E020=04xx?)	NO	Go to step 6.
Stray light	5	Is the front cover open while the transfer unit front cover is removed (i.e., is the black toner concentration sensor subject to stray light)?	YES	Mount the transfer unit front cover (to shut out the stray light).
Black toner concentration sensor			NO	Replace the black toner concentration sensor.
Toner concentration sensor	6	Replace the toner concentration sensor of the color for which E020 is indicated. Is the problem corrected?	YES	End.
Photosensitive drum	7	Replace the photosensitive drum. Is the problem corrected?	YES	End.
Developing cylinder	8	Is the developing cylinder of the color for which E020 is indicated rotating?	NO	Check the developing cylinder drive system.
Developing assembly locking assembly	9	Is the locking of the developing assembly of the color for which E020 is indicated normal?	NO	See "The developing assembly fails to be locked in position."
Toner level sensor			YES	Check the level of toner inside the hopper and the toner lever sensor.

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e. E020=00FF, xxFF

Cause	Step	Checks	Yes/No	Action
Hopper motor (M10)	1	Select the hopper motor (0) in service mode (COPIER>FUNCTION>PART-CHK>MTR), and press OK for MTR-ON. Does the hopper motor rotate?	NO	Check the wiring from the DC driver PCB to the hopper motor; if normal, replace the motor.
DC driver PCB, CPU PCB			YES	Replace the DC driver PCB or the CPU PCB.

E020 Making Checks

1) Find out the color for which E020 is indicated in service mode (COPIER>DISPLAY>ERR).
2) Turn off and then on the copier, and select the following:
   - A3/11x17
   - 21 copies
   - mono color copying (using the color for which E020 is indicated)
3) Select COPIER>DISPLAY>DENS in service mode.
4) Place several sheets of A3/11x17 copy paper on the copyboard glass, and press the Copy Start key.
5) Check the following:
   - Normal if the reading of DENS of the color for which E020 is indicated approaches '0' during copying.
   - Is E020 indicated after copying operation?

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11	E021

· Check the detail code in service mode (COPIER>DISPLAY>ERR).

Cause	Step	Checks	Yes/No	Action
----------	1	Is the detail code 0100, 0200, 0300, or 0400?	YES	Go to step 4.
Connector	2	Is the connector of the developing assembly HP sensor indicated by the detail code connected securely?	YES	Connect the connector securely.
Developing assembly HP sensor (PS49, PS51, PS53, PS55)	3	Replace the developing assembly HP sensor indicated by the detail code. Is the problem corrected?	YES	End.
Developing assembly locking drive assembly	4	Is the developing assembly locking drive assembly subjected to foreign matter or damage?	YES	Remove any foreign mater. If damage is found, remove the cause, and make repairs.
Developing assembly locking motor (PM1, PM2, PM3, PM4)	5	Replace the developing assembly locking motor indicated by the detail code. Is the problem corrected?	YES	End.
DC fuse PCB	6	Is 24 V present between J330-3 and -4 and 5 V between J330-1 and -2 on the developing assembly locking driver PCB?	NO	Replace the DC fuse PCB.
Developing assembly driver PCB	7	Replace the developing assembly locking driver PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver or the CPU PCB.

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12 E040

· Check the detail code in service mode (COPIER>DISPLAY>ERR).

Cause	Step	Checks	Yes/No	Action
----------	1	Is the detail code 0001, 0002, or 0003?	YES	Go to step 4.
Cassette lifter drive assembly	2	Is the cassette lifter motor drive assembly indicated by the detail code subjected to foreign matter or damage?	YES	Remove the foreign matter. If damage is found, remove the cause, and make repairs.
Cassette lifter motor (M11, M12; DM12, M13, DM13)	3	Replace the cassette lifter motor indicated by the detail code. Is the problem corrected?	YES	End.
Multifeeder lifter drive assembly	4	Is the multifeeder lifter drive assembly subjected to foreign mater or damage?	YES	Remove any foreign matter. If damage is found, remove the cause, and make repairs.
Multifeeder lifter motor (M15)	5	Replace the multifeeder lifter motor. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

13 E041

Cause	Step	Checks	Yes/No	Action
Deck lifter position sensor (PS104)	1	Is the deck lifter position sensor normal? (See the instructions on how to check photointerrupters.)	NO	Replace the sensor (PS104).
Lifter cable	2	Is the lifter cable routed correctly?	NO	Route the cable properly.
DC power supply	3	Is 24 V present between J3-3 and -4 and 5 V between J3-1 and -2 on the deck driver PCB?	NO	Check the DC fuse PCB and the DC power supply PCB.
Deck lifter motor (M101)	4	Replace the deck lifter motor. Is the problem corrected?	YES	End.
CPU PCB			NO	Replace the deck driver PCB or the CPU PCB.

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14	E051

Cause	Step	Checks	Yes/No	Action
Paper jogging guide HP sensor (PS40)	1	Is the paper jogging guide HP sensor normal? (See the instructions on how to check photointerrupers.)	NO	Replace the sensor (PS40).
Paper jogging guide	2	Is there any obstacle or foreign matter in the path of the paper jogging guide plate?	YES	Remove any object or foreign matter.
Duplexing paper jogging guide motor (PM14)	3	Replace the duplexing paper jogging guide motor. Is the problem corrected?	YES	End.
DC fuse PCB	4	Is there 24 V between J390-3 and -4 and 5 V between J390-1 and -2 on the duplexing driver PCB?	NO	Replace the DC fuse PCB.
Duplexing driver PCB	5	Replace the duplexing driver PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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15 E061

Cause	Step	Checks	Yes/No	Action
----------	1	Is the setting of COPIER>ADJUST>V-CONT-M/C/Y/K in service mode identical to the settings recorded on the service label?	NO	Enter the settings from the service label newly.
----------	2	Check the detail code in service mode (COPIER>DISPLAY>ERR).		
		Is it 0000 or 0001?	YES	Go to step 3.
		Is it 0010?	YES	Go to step 4.
		Is it 0020?	YES	Go to step 5.
		Is it 0030, 0031, or 0032?	YES	Go to step 9.
		Is it 0040?	YES	Go to step 12.
		Is it 0050, 0051, 0052, or 0053?	YES	Go to step 16.
		Is it 0070, 0071, xx80, or xx81?	YES	Go to step 19.
		Is it 0060 or 009x?	YES	Go to step 20.
Potential sensor unit	3	Turn on and off the power switch. Does LED1 on the potential measurement PCB remain on during potential control?	NO	Replace the potential sensor unit.
			YES	Check the wiring from the DC driver PC to the potential sensor.
Pre-exposure lamp	4	Does the pre-exposure lamp turn on during copying operation?	NO	Check the wiring from the DC driver PCB to the pre-exposure lamp; if normal, replace the pre-exposure lamp.
			YES	Check the potential sensor unit.
Primary charging assembly	5	Is the primary charging assembly connected properly?	NO	Connect the assembly properly.
	6	Is the primary charging wire broken or soiled?	YES	Clean or route the charging wire once again.
	7	Are there traces of leakage on the primary charging assembly?	YES	Replace the primary charging assembly.
High-voltage cable	8	Is there electrical conductivity from the primary charging wire to the high-voltage transformer (HVT-DC)?	NO	Check the primary high-voltage cable.
			YES	Replace the HVT-DC PCB.

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Cause	Step	Checks	Yes/No	Action
HVT-DC PCB	9	Is the primary charging assembly fitted properly?	NO	Fit the assembly properly.
Primary charging grid plate	10	Is the grid plate of the primary charging assembly mounted properly?	NO	Mount the grid plate properly.
High-voltage cable	11	Is there electrical continuity from the grid plate of the primary charging assembly to the high-voltage transformer (HVT-DC)?	NO	Check the grid high-voltage cable.
HVT-DC PCB			YES	Replace the HVT-DC PCB.
Post-cleaning charging assembly	12	Is the post-cleaning charging assembly fitted properly?	NO	Fit the assembly properly.
	13	Is the post-cleaning charging wire broken or soiled?	YES	Clean or fit the charging wire properly.
	14	Are there traces of leakage in the post-cleaning charging assembly?	YES	Replace the post-cleaning charging assembly.
High-voltage cable	15	Is there electrical continuity from the post-cleaning charging assembly to the high-voltage transformer (HVT-DC)?	NO	Check the post-cleaning high-voltage cable.
			YES	Replace the HVT-DC PCB.
Laser exposure system	16	Is the movement of the laser shutter normal?	NO	Check the shutter assembly.
	17	Is the dust-proofing glass or the bending mirror soiled?	YES	Clean it.
	18	Is the laser power normal? (See the descriptions given for how to adjust the laser power.)	NO	Adjust the laser power. If output is absent, replace the laser unit or the laser driver.
Photosensitive drum			YES	Check the photosensitive drum for grounding; if normal, replace the photosensitive drum.
Environment sensor	19	Check the temperature and humidity in service mode (COPIER>DISPLAY>ANALOG> TEMP/HUM). Are the readings normal?	NO	Check the environment sensor according to the instructions under 7. "Checking the Environment Measurement PCB."
CPU PCB			YES	Replace the CPU PCB.

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Cause	Step	Checks	Yes/No	Action
Photosensitive drum	20	Is the photosensitive drum grounded properly?	NO	Ground the drum properly.
Potential sensor	21	Clean the potential sensor. Is the problem corrected?	YES	End.
Photosensitive drum	22	Replace the photosensitive drum. Is the problem corrected?	YES	End.
CPU PCB			NO	Replace the CPU PCB.

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16 E062

Cause	Step	Checks	Yes/No	Action
SSR2	1	Replace SSR2. Is the problem corrected?	YES	End.
DC driver PC, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

17 E067

Cause	Step	Checks	Yes/No	Action
Connector (J421)	1	Is the connector J421 on the HVT-AC PCB disconnected?	YES	Connect the connector properly.
DC fuse PCB	2	Is 24 V present between J420-1 and -2 on the HVT-AC PCB?	NO	Replace the DC fuse PCB.
Separation charging assembly	3	Is the separation charging assembly showing signs of leakage?	YES	Correct the area of leakage; or, replace the charging assembly.
External/internal static eliminator assembly	4	Is the external/internal charging assembly showing signs of leakage?	YES	Correct the area of leakage; or, replace the static eliminator.
HVT-AC PCB	5	Replace the HVT-AC PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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18	E071

· Check the detail code in service mode (COPIER>DISPLAY>ERR).

Cause	Step	Checks	Yes/No	Action
Side A sensor, side B sensor, C sensor (PS2, PS3, PS4)	1	Replace the sensor indicated by the detail code. Is the problem corrected?	YES	End.
Signal plate	2	Is the condition of the signal plate indicated by the detail code normal?	NO	If the plate is displaced, mount it properly; if it is damaged, replace it.
Transfer drum locking assembly	3	Is the transfer drum locked normally?	NO	Check the locking mechanism of the transfer drum.
Drum motor drive assembly	4	Is the drum motor drive assembly subjected to overload?	YES	Remove the cause of overload.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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19	E072

· Check the detail code in service mode (COPIER>DISPLAY>ERR).

a. E72=0002

Cause	Step	Checks	Yes/No	Action
Transfer drum cleaner brush motor (M8)	1	Replace the transfer drum cleaner brush motor. Is the problem corrected?	YES	End.
Registration path driver PCB	2	Set the meter range to 12 VDC, and press the Copy Start key. Does the voltage between J1013-B14 (TRCMON; +5V) and J1013-B12 (-) on the DC driver PCB change from 0 to 5 V when rotation starts?	YES	Replace the registration path driver PCB.
DC driver PCB, CPU PCB			NO	Replace the DC PCB or the CPU PCB.

b. E72=0003

Cause	Step	Checks	Yes/No	Action
Polishing roller drive system	1	Does the polishing roller drive system have a fault? Or, is it subjected to overload?	YES	Replace the faulty part. Further, remove the cause of the fault.
Polishing roller motor (M9)	2	Replace the polishing roller motor. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

c. E72=0202

Cause	Step	Checks	Yes/No	Action
Attraction/transfer locking cam HP sensor (PS8)	1	Is the attraction/transfer locking cam HP sensor normal?	NO	Replace the sensor (PS8).
Attraction brush, transfer blade, internal brush	2	Does the rotation assembly of the attraction brush, transfer blade, or internal brush have a fault?	YES	Remove the cause of the fault, and replace any faulty part.
Attraction/transfer locking cam motor (PM7)	3	Replace the attraction/transfer locking cam motor. Is the problem corrected?	YES	End.
Transfer driver PCB	4	Replace the transfer driver PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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20	E073

· Check the detail code in service mode (COPIER>DISPLAY>ERR).

a. E073=0001

Cause	Step	Checks	Yes/No	Action
Drawer connector 1 (transfer unit lever)	1	Does the drawer connector 1 of the transfer unit lever have a fault?	YES	Replace the drawer connector 1.
DC driver PCB, CPU PCB			NO	Check the wiring from J1014-A4 on the DC driver PCB to the drawer connector J571 of the transfer unit lever; if normal, replace the DC driver PCB or the CPU PCB.

b. E073=0002

Cause	Step	Checks	Yes/No	Action
Transfer unit drawer connector 2	1	Does the transfer unit drawer connector 2 have a fault?	YES	Replace the drawer connector 2.
DC driver PCB, CPU PCB			NO	Check the wiring from J1013-B2 on the DC driver PCB to the transfer unit drawer connector J544; if normal, replace the DC driver PCB or the CPU PCB.

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21 E074

Cause	Step	Checks	Yes/No	Action
Transfer drum HP sensor (PS57)	1	Is the transfer drum HP sensor normal? (See the instructions on how to check photointerrupers.)	NO	Replace the sensor (PS57).
Transfer drum locking motor (PM5)	2	Replace the transfer drum locking motor. Is the problem corrected?	YES	End.
DC fuse PCB	3	Is 24 V present between J300-3 and -4 on the transfer driver PCB and 5 V between J300-1 and-2?	NO	Replace the DC fuse PCB.
Transfer locking driver PCB	4	Replace the transfer locking driver PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

22 E079

Cause	Step	Checks	Yes/No	Action
Transfer drum cleaner HP sensor (PS59)	1	Is the transfer drum cleaner HP sensor (PS59) normal? (See the instructions on how to check photointerrupers.)	NO	Replace the sensor (PS59).
DC fuse PCB	2	Is 24 V present between J300-3 and -4 and 5 V between J300-1 and -2 on the transfer driver PCB?	NO	Replace the DC fuse PCB.
Transfer locking driver PCB	3	Replace the transfer locking driver PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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23	E100

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>Laser shutter</td><td>1</td><td>Is the laser shutter operation normal?</td><td>NO</td><td>Replace any faulty part</td></tr>
<tr><td>DC power supply PCB</td><td>2</td><td>Is power present at J1200 on the laser controller PCB?
<table><tr><th>Voltage</th><th>(+)</th><th>(-)</th></tr><tr><td>+5V</td><td>J1200-2</td><td>J1200-1</td></tr><tr><td>+8.8V</td><td>J1200-3</td><td>J1200-4</td></tr><tr><td>-8V</td><td>J1200-5</td><td>J1200-4</td></tr><tr><td>+24V</td><td>J1200-7</td><td>J1200-6</td></tr></table></td><td>NO</td><td>Check the wiring and the DC fuse PCB; if normal, replace the DC power supply PCB.</td></tr>
<tr><td>Connector, Wiring</td><td>3</td><td>Is there a fault between the following connectors:
Laser controller PCB
J1201, J1202, J1203, J1207
Laser Driver/Motherboard
J1301, J1302, J1303
BD PCB
J1210</td><td>YES</td><td>Connect them properly.</td></tr>
<tr><td>Laser exposure system</td><td>4</td><td>Is the laser power normal? (See the instructions on how to adjust the laser power.)</td><td>NO</td><td>Adjust the laser power. If output is absent, replace the laser unit or the laser driver PCB.</td></tr>
<tr><td>BD unit</td><td rowspan="2">5</td><td rowspan="2">Clean the light-receiving face of the BD unit. Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td>Laser driver PCB
Image processor main PCB</td><td>NO</td><td>Try replacing the following:
· BD unit
· laser driver PCB
· image processor main PCB</td></tr>
</table>

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24 E110

Cause	Step	Checks	Yes/No	Action
DC fuse PCB	1	Is 24 V present between J375-1 and -2 on the laser scanner driver PCB?	NO	Replace the DC fuse PCB.
Laser scanner motor (M3)	2	Replace the laser scanner motor. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Check the wiring from the motor to the DC driver PCB; if normal, replace the DC driver PCB or the CPU PCB.

25 E120

Cause	Step	Checks	Yes/No	Action
Laser controller unit	1	Replace the laser controller unit. Is the problem corrected?	YES	End.
DC driver PCB CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

26 E190

Cause	Step	Checks	Yes/No	Action
DC power supply PCB	1	Is power present at J1200 on the laser controller PCB?	NO	Check the wiring and the DC fuse PCB; if normal, replace the DC power supply PCB.
Connector, wiring	2	Is there a fault in the connection between J2009 on the CPU PCB and J1206 on the laser controller PCB?	YES	Connect the connectors properly.
Laser controller unit, CPU PCB			NO	Try replacing the following part in turns. · laser controller unit · CPU PCB

Voltage	(+)	(-)
+5V	J1200-2	J1200-1
+8.8V	J1200-3	J1200-4
-8V	J1200-5	J1200-4
+24V	J1200-7	J1200-6

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27 E202

Note: No code id indicated, and keys are disabled.

Cause	Step	Checks	Yes/No	Action
Original scanner HP sensor (PS1)	1	Is the original scanner HP sensor normal? (See the instructions on how to check photointerrupters.)	NO	Replace the sensor (PS1).
Original scanner motor (PM15)	2	Replace the original scanner motor. Is the problem corrected?	YES	End.
Original scanner motor driver PCB	3	Replace the original scanner motor driver PCB. Is the problem corrected?	YES	End.
CPU PCB			NO	Check the wiring from the original scanner motor driver PCB to the CPU PCB; if normal, replace the CPU PCB.

28 E208

Cause	Step	Checks	Yes/No	Action
DC power supply PCB	1	Is power present at J380 on the original scanner motor driver PCB?	NO	Check the wiring; if normal, replace the DC power supply PCB.
Connector, wiring	2	Is there a fault in the connection between J602 on the original scanner motor drive PCB and J2003 on the CPU PCB?	YES	Connect the connectors properly.
Original scanner motor driver PCB, CPU PCB			NO	Replace the following parts in turns: · original scanner motor driver PCB · CPU PCB

Voltage	(+)	(-)
+5V	J380-2	J380-1
+8.8V	J380-4	J380-3
+12V	J380-6	J380-5
+40V	J380-8	J380-7

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29	E220

Cause	Step	Checks	Yes/No	Action
----------	1	Does the scanning lamp turn on?	NO	See "The scanning lamp fails to turn on."
Connector, wiring	2	Is there a fault in the connection between J2004 on the CPU PCB and J450 on the lamp regulator PCB?	YES	Connect the connectors properly.
Lamp regulator PCB, CPU PCB			NO	Try replacing the following parts in turns: · lamp regulator PCB · CPU PCB

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30 E305

· Check the detail code in service mode (COPIER>DISPLAY>ERR).

Detail Codes

Density conversion RAM error

Detail code	Detection	Detail code	Detection
0001	BD error (same as E100)	0100	IP-ED PCB RAM error or absence of connection
0002	Density conversion RAM error		
0004	B shading correction RAM error	0400	IP-PRJ PCB RAM error or absence of connection
0008	G shading correction RAM error		
0010	R shading correction RAM error	0800 1000	IP-IF PCB RAM error or absence of connection
0020	Color correction RAM error		
0040	Original scanner motor error		

If multiple errors from above occur at the same time, the detail code will be the sum and indicated in hexadecimal notation; for example,
If BD error (0001), B shading correction RAM error (0004), and G shading correction RAM error (0008) occur at the same time, the indication will be
0001 + 0004 + 0010 = 001C.

a. E305=0001
See the descriptions under E100.

b. E305=0002, 0004, 0008/ 0010, 0020

Cause	Step	Checks	Yes/No	Action
IP-MAIN PCB	1	Is the connection between IP-MAIN PCB and the IP-MOTHER PCB/IP-ED PCB/IP-IF PCB normal?	NO	Disconnect and connect each PCB. Check the communication cable between PCBs.
			YES	Replace the IP-MAIN PCB.

31 E351

Cause	Step	Checks	Yes/No	Action
· IP-MAIN PCB · IP-ECO PCB · Laser driver PCB	1	Is the IP-ECO PCB and the IP-MOHTER PCB connected securely?	NO	Connect the PCBs properly.
			YES	Try replacing the following parts in turns: · IP-ECO PCB · IP-MAIN PCB · Laser driver PCB

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32 E620

Cause	Step	Checks	Yes/No	Action
Connector, wiring	1	Is the connection between J223/ J224 on the IP-ED PCB and J214/ J215 on the IP-MIAN PCB normal?	NO	Connect the connectors properly.
IP-ED PCB IP-MAIN PCB			YES	Try replacing the following parts in turns: · IP-ED PCB · IP-MAIN PCB

33 E634

Cause	Step	Checks	Yes/No	Action
Lamp (projector)	1	Is the lamp of the projector normal?	NO	Replace the lamp.
Thermal switch (projector)	2	Is the thermal switch of the projector on?	YES	Remove the cause of activation, and replace the thermal switch.
			NO	Try replacing the following parts in turns: · power supply PCB of projector · projector controller PCB

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34 E700

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>DC power supply PCB</td><td rowspan="2">1</td><td rowspan="2">Is power present at J2010 on the CPU PCB?<table><tr><th>Voltage</th><th>(+)</th><th>(-)</th></tr><tr><td>+5V</td><td>J2010-2</td><td>J2010-1</td></tr><tr><td>-8V</td><td>J2010-3</td><td>J2010-4</td></tr><tr><td>+8.8V</td><td>J2010-5</td><td>J2010-4</td></tr><tr><td>+24V</td><td>J2010-7</td><td>J2010-6</td></tr><tr><td>+15V</td><td>J2010-9</td><td>J2010-8</td></tr></table></td><td>NO</td><td>Check the wiring; if normal, replace the DC power supply PCB.</td></tr>
<tr><td>CPU PCB</td><td>YES</td><td>Replace the CPU PCB.</td></tr>
</table>

35 E717

Cause	Step	Checks	Yes/No	Action
Service mode	1	Has the copy data/remote diagnostic device been disconnected from the copier after executing COPIER>OPTION>INIT-FACE>B-CLR?	NO	Disconnect it after executing service mode.
Connection	2	Is there a fault in the connection between the copier and the copy data/remote diagnosis device?	YES	Connect the connectors properly.
Copy data/remote diagnostic device controller PCB, CPU PCB			NO	Try replacing the following parts in turns: · copy data/remote diagnostic device PCB · CPU PCB

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36 E718

Cause	Step	Checks	Yes/No	Action
Power supply PCB (projector)	1	Is the power supply PCB of the projector normal?	NO	Replace the power supply PCB.
Connector, wiring	2	Is the connection between J216/ J217,/J218 on the IP-MAIN PCB and J216/J241/J242 on the IP-PRJ PCB faulty?	YES	Connect the connectors properly.
IP-PRJ PCB, IP-MAIN PCB, CPU PCB			NO	Try replacing the following parts in turns: · IP-PRJ PCB · IP-MAIN PCB · CPU PCB

37 E800

Cause	Step	Checks	Yes/No	Action
Malfunction	1	Turn off and then on the power switch. Is the problem corrected?	YES	End.
Connector	2	Is the connection of the relay connector J8 of the power switch SW1 faulty?	YES	Connect the connector properly.
DC fuse PCB	3	Is 24 V present between J932-1 and -7 on the DC fuse PCB?	NO	Replace the DC fuse PCB.
Power switch (SW1)	4	Replace the power switch. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Check the wiring from the DC driver PCB to the power switch; if normal, replace the DC driver PCB or the CPU PCB.

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38	E804

Cause	Step	Checks	Yes/No	Action
Fan	1	Replace the fan indicated by the detail code. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Check the wiring from the fan to the DC driver PCB or the CPU PCB; if normal, replace the DC driver PCB or the CPU PCB.

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39 AC power is absent.

Cause	Step	Checks	Yes/No	Action
Power plug	1	Is the power lug connected to the power outlet?	NO	Connect the power plug.
Power source	2	Is the rated AC voltage present at the power outlet?	NO	Advise the user that this is not a problem of the copier.
----------	3	Is the rated voltage present between terminal 2 and 6 of the AC power cut relay (RL1)?	YES	Go to step 5.
Leakage breaker (ELB; faulty or off)	4	Is the switch of the leakage breaker (ELB) on? Or, is it 0Ω when both terminals of the breaker is checked for electrical continuity?	NO	Find out the cause of activation (why the breaker has turned on), and then turn on the switch. To find out the cause of activation, measure the resistance between the power cord terminal and frame GND and across the power cord terminals; if it is 0Ω, disconnect AC connectors in sequence to pin-point the cause. Major Causes · trapping of AC harness (inside fixing assembly, deck heater, etc.). · faulty AC unit (DCP, CVR, oil pump driver, drum heater controller, SSR) or presence of foreign matter Try a check for electrical continuity once again; if not 0Ω, replace the leakage breaker.
Power cord, line filter (LF1)			YES	Check or replace the power cord or the line filter.
Power switch (SW1)	5	Connect the meter probes to both terminals of the power switch (SW1). Is the resistance 0Ω when the switch is turned on and ∞Ω when the switch is turned off?	NO	Replace the relay (RL1).
AC power cut relay (RL1)	6	Connect the meter probes to both terminals of the relay (RL1). Is the resistance 0Ω when the switch is turned on and ∞Ω when the switch is turned off?	NO	Replace the relay.
			YES	Check the wiring of the AC power line and connectors.

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40 DC power is absent.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>AC power supply</td><td>1</td><td>Is AC power present between the following terminals?
between J701-1 and J701-3 and between J701-2 and J701-4 on the DC power supply PCB</td><td>NO</td><td>See "AC power is absent."</td></tr>
<tr><td>Transfer unit lever switch (SW3), left front door switch (SW4), delivery door switch (SW5)</td><td>2</td><td>Turn off the power switch, and disconnect the power plug; then, check each switch (SW3, SW4, SW5) for electrical continuity. Is it normal?</td><td>NO</td><td>Replace the faulty switch.</td></tr>
<tr><td>DC power supply PCB</td><td>3</td><td>Disconnect all connectors of the DC power supply PCB (J1702, J1703, J1704, J1705, J1706). Connect the power plug to the power outlet, and turn on the power switch. Is the DC power output of each connector normal?
<table>
<tr><th>Connector</th><th>Pin</th><th>Output</th></tr>
<tr><td>J1702</td><td>1</td><td>38V</td></tr>
<tr><td>J1703</td><td>1 to 4</td><td>24V</td></tr>
<tr><td>J1704</td><td>1</td><td>12V</td></tr>
<tr><td></td><td>3</td><td>3.3V</td></tr>
<tr><td>J1705</td><td>1</td><td>24V-F</td></tr>
<tr><td></td><td>3</td><td>8.8V</td></tr>
<tr><td></td><td>5</td><td>8VR</td></tr>
<tr><td></td><td>7</td><td>-8V</td></tr>
<tr><td></td><td>9</td><td>15V</td></tr>
<tr><td>J1706</td><td>1, 2</td><td>5V</td></tr>
</table></td><td>NO</td><td>Replace the DC power supply PCB.</td></tr>
</table>

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<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>Wiring, DC load</td><td rowspan="2">4</td><td rowspan="2">Connect all connectors of the DC power supply PCB. Is the voltage of the connectors shown in the following table normal?
<table><tr><th>Connector</th><th>Pin</th><th>Output</th></tr><tr><td>J906</td><td>3, 4</td><td>5V</td></tr><tr><td>J907</td><td>4 to 6</td><td>5V</td></tr><tr><td>J908</td><td>6 to 10</td><td>5V</td></tr><tr><td>J909</td><td>5to8</td><td>5V</td></tr><tr><td>J910</td><td>2</td><td>5V</td></tr><tr><td>J931</td><td>4 to 6</td><td>24V</td></tr><tr><td>J932</td><td>4 to 7</td><td>24V</td></tr><tr><td>J933</td><td>5 to 7</td><td>24V</td></tr><tr><td>J934</td><td>6 to 9</td><td>24V</td></tr><tr><td>J935</td><td>3, 4</td><td>24V</td></tr><tr><td>J936</td><td>5 to 8</td><td>24V</td></tr><tr><td>J937</td><td>2, 4</td><td>38V</td></tr></table></td><td>YES</td><td>Check the wiring from the DC fuse PCB to the DC loads. Check the DC loads.</td></tr>
<tr><td>DC fuse PCB</td><td>NO</td><td>Replace the DC fuse PCB.</td></tr>
</table>

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41 The original scanner fails to move forward/in reverse.

Cause	Step	Checks	Yes/No	Action
Cable (broken, disconnected)	1	Is the drive cable routed properly?	NO	Route the cable properly.
Travel path	2	Is the rail free of dirt? Does the mirror base move smoothly when pushed by hand?	NO	Check the surface of the rail for dirt, foreign matter, or object in the way of the scanner; as necessary, clean, lubricate, or repair. Reference: If the surface of the rail is soiled, clean it with alcohol, and apply a small amount of lubricant.
Original scanner home position sensor (PS1)	3	Is the original scanner home position sensor (PS1) normal?	NO	Check the wiring and the light-blocking plate; if normal, replace the sensor.
Connector, wiring	4	Are the connection and wiring of the following connectors normal? Original Scanner Motor Driver PCB: J601 (J380) DC power supply PCB: J951	NO	Connect the connector properly.
DC power supply PCB	5	Set the meter range to 50 VD, and measure the voltage between the following terminals; is it normal? J601-2 (+) and -1 (-): about 5 V J601-4 (+) and -3 (-): about 8 V J601-8 (+) and -7 (-): about 38 V	NO	See "DC power is absent."
Original scanner motor driver PCB	6	Replace the original scanner motor driver PCB. Is the problem corrected?	YES	End.
Original scanner motor (PM15)			NO	Replace the original scanner motor.

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42 The scanning lamp fails to turn on.

Cause	Step	Checks	Yes/No	Action
Scanning lamp	1	Turn off the power switch, and disconnect the power plug. Is the lamp mounted properly?	NO	Mount the lamp properly.
Scanner thermal switch (TP1, TP6)	2	Check both terminals of the scanner thermal switch. Is there electrical continuity?	NO	Replace the thermal switch. · If the lamp has turned on wrongly, the thermal switch may be mounted wrongly or the cooling fan may have failed to turn on. Be sure to find out the cause.
Scanning lamp (open circuit)	3	Disconnect J11 (3-pin) of the lamp regulator, and set the meter range to 1 kΩ. Dose the index swing when the probe is connected to J11 on the harness side?	NO	Check the wiring from J11 to the lamp; if normal, replace the lamp.
Lamp regulator cover current	4	Is there electrical continuity on the fuse inside the lamp regulator?	NO	Replace the lamp regulator. · Check to make sure that the lamp and the harness do not have a short circuit.
AC power supply	5	Connect J11, and disconnect J9 (4-pin). Connect the connector, and turn on the power. Set the meter range to 300 VAC, and measure the voltage between J9-1 and -4 on the harness side. Is the rated AC power present?	NO	See "AC power is absent."

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Cause	Step	Checks	Yes/No	Action
DC power	6	Turn off the power switch, and connect J9. Set the meter range to 50 VDC, and turn on the power switch. Is 24 VDC present between J450-2 (+; 24 V) and J450-1 (-; GND)?	NO	See "DC power is absent."
Lamp regulator	7	Set the meter range to 50 VDC, and connect the probes to J450-10 (+; LAON) and J450-1 (-; GND) of the lamp regulator. Does the voltage change from about 24 to about 0 V when the Copy Start key is pressed?	YES	Replace the lamp regulator.
CPU PCB			NO	Check the wiring from J450 to J2004 on the CPU PCB; if normal, replace the CPU PCB.

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43 The developing assembly fails to be locked in position.

Cause	Step	Checks	Yes/No	Action
Developing assembly locking motor (PM1, PM2, PM3, PM4)	1	Does each developing assembly motor operate?	NO	Check the connectors and wiring; if normal, replace the motor.
Cam, foreign matter, pressure leaf spring	2	Remove the developing assembly drive assembly. Does the cam operate smoothly? Is the lever spring deformed? Is there foreign matter?	NO	Replace the cam, replace the leaf spring, or remove the foreign matter.
Gear, foreign matter	3	Remove the developing assembly locking drive assembly. Is the gear chipped? Is there foreign matter?	YES	Replace the gear, or remove the foreign matter.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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44 The cassette lifter fails to move up.

Cause	Step	Checks	Yes/No	Action
Cassette	1	Slide out the cassette, and move up the holding plate inside the cassette by hand. Does it move smoothly?	NO	Check the inside of the cassette for foreign matter.
Latch (cassette)	2	Is the movement of the latch assembly of the grip on the cassette normal?	NO	Mount it properly.
Spring, lever	3	Push down the pickup roller releasing lever with your finger. Does the pickup roller move down?	NO	Remove the pickup assembly, and check the spring and the lever
Lifter sensor (PS19, PS22, PS23)	4	Is the lifter sensor normal?	NO	Check the lever and the wiring; if normal, replace the sensor.
Cassette 1 lifter motor (M11, DM12), cassette 2 lifter motor (M12, DM13), cassette 3 lifter motor (M13)	5	Turn off the power switch, and disconnect the connectors J1020, J1019, and J1018 on the DC driver PCB. Set the meter range to x100Ω, and measure the resistance between the following terminals; is it about 60Ω? M11: J1020-A1, -2A M12, DM12: J1019-B4, -5B M13, DM13: J1018-B4, -5B	NO	Check the wiring from the connector to the motor; if normal, replace the motor.
M11, DM12, M12, DM13, M13	6	Connect the connectors, and turn on the power switch. Set the meter range to 30 VDC. Does the voltage between the following terminals change from about 0 to about 24 V when the cassette is slid in? M11: J1020-A1 (+), -A2 M12, DM12: J1019-B4 (+), -B5 M13, DM13: J1018-B4 (+), -B5	YES	Remove the pickup assembly, and check the gear; if normal, replace the motor.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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45 Pickup operation fails (cassette, duplexing unit).

Cause	Step	Checks	Yes/No	Action
----------	1	Slide the cassette in and out. Is the sound of the lifter falling and the lifter motor turning heard?	NO	See "The cassette lifter fails to move up."
Drive belt	2	Is the drive belt routed properly?	NO	Route the drive belt properly.
Right front cover, left front cover, right lower cover, left cover	3	Are the right front cover, left front cover, right lower cover, and left cover closed properly?	NO	Close the covers properly.
Registration roller assembly drive clutch	4	Is the leading edge of copy paper as far as the registration roller assembly?	NO	See "The registration roller fails to rotate."
Paper sensors (cassette 1, PS20/ DPS24; cassette 2, PS24/DPS25; cassette 3, PS25)	5	Does the Add Paper message remain on even when the Copy Start key is pressed?	YES	Check the paper sensor.
Copy paper	6	Are the dimensions of copy paper placed in the cassette as indicated?	NO	Replace the paper with paper of recommended dimensions.
Gear	7	Is the drive from the pickup motor transmitted to the cassette holder through the gear normally?	NO	Check the gear.
Pickup/separation/ feed roller	8	Does the pickup/separation/feed roller rotate?	YES	· Check the pickup/ separation/feed roll. · Check the guide plate for deformation and foreign matter.

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Cause	Step	Checks	Yes/No	Action
Pickup roller solenoid cassette 1 (SL7, DSL8) cassette 2 (SL8, DSL9) cassette 3 (SL9) duplexing feed roll solenoid (SL13)	9	Turn off the power switch, and disconnect J346, J347, and J348 of the pickup driver PCB and J392 of duplexing driver PCB. Set the meter range to x100Ω, and measure the resistance between the following terminals on the harness side; is it about 120Ω? SL7: J346-15, -16 SL8, DSL8: J347-15, -16 SL9, DSL9: J348-15, -16 SL13: J392-A1, -A2	NO	Check the wiring; if normal, replace the solenoid.
Pickup clutch (CL11, DCL12, CL12, DCL13, CL13)	10	Turn off the power switch, and disconnect J346, J347, and J348 of the pickup driver PCB, and J393 of the duplexing driver PCB. Set the meter range to x100Ω, and measure the resistance between the following terminals; is it about 120W? CL11: J346-7, -8 CL12: J347-7, -8 CL13: J348-7, -8 Duplexing unit CL14: J393-A3, -A4	NO	Check the wiring; if normal, replace the clutch.
Pickup driver PCB, duplexing drive PCB	11	Replace the pickup driver PCB or the duplexing driver PCB. Is the problem corrected?	YES	End.
DC drive PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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46 Pickup operation fails (multifeeder).

Cause	Step	Checks	Yes/No	Action
Multifeeder pickup roller	1	Is paper picked up, not slipping under the pickup roller?	YES	Replace the pickup roller.
Multifeeder pickup clutch (CL16)	2	Select the multifeeder, and press the Copy Start key. Does the multifeeder pickup roller rotate?	NO	Check the wiring; if normal, replace the clutch.
Lifter plate	3	Does the lifter plate move up when the Copy Start key is pressed?	NO	Check the lifter plate drive system; as necessary, adjust or replace the plate.
Multifeeder paper pickup solenoid (SL14)	4	Connect the + probe of the meter to J345-B8 on the pickup driver PCB. Does the voltage change from about 24 to about 0 V when the Copy Start key is pressed?	YES	Check the wiring; if normal, replace the solenoid.
Pickup driver PCB	5	Replace the pickup driver PCB. Is the problem corrected?	YES	End.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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47 The registration roller fails to rotate.

Cause	Step	Checks	Yes/No	Action
Gear, pre-registration motor 2 (PM8), pre-registration motor 1 (PM9)	1	Is the drive from the main motor and the pre-registration motor 1/2 transmitted to each roller through gears?	NO	Check the motor (PM8, PM9) and the drive system (e.g., gears).
Registration roller clutch (CL9)	2	Set the meter range to 30 VDC, and measure the voltage between J312-A3 (+) and -A4 of the registration path driver PCB. Does it change from about 0 to about 24 V after pickup?	YES	Replace the clutch.
Registration path driver PCB	3	Replace the registration path driver PCB. Is the problem corrected?	YES	Replace the registration driver PCB.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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48 Attraction fails.

Cause	Step	Checks	Yes/No	Action
Attraction solenoid, spring clutch, pressure cam	1	At time of attraction, is the attraction roller locked to the transfer drum?	NO	Check or replace the attraction solenoid, spring clutch, or locking cam.
Locking spring, bushing	2	At time of attraction, does the attraction roller rotate smoothly?	NO	Check the locking spring of the attraction guide and the bushing of the attraction roller.
Attraction guide	3	Is the position of the attraction guide normal?	NO	Mount the guide properly.
High-voltage cable	4	Is the connection of the high-voltage cable inside the transfer drum normal?	NO	Connect the cable properly.
Grounding plate	5	Is the resistance between the attraction roller and the copier's side plate about 20 MΩ?	NO	Check the bushing of the attraction roller and the grounding plate at the front.
Attraction charging assembly	6	Replace the attraction charging assembly. Is the problem corrected?	YES	End.
Transfer drum sheet	7	Does the transfer drum sheet have scratches or dents?	YES	Replace the sheet.
Copy paper	8	Is the copy paper curled, wavy, or otherwise out of shape?	YES	Replace the paper. Advise the user on the correct method of storing paper.
	9	Replace the paper with paper fresh out of package. Is the problem corrected?	YES	End.
	10	Try paper of a type recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
	11	Is regular paper free of the problem?	YES	Advise the user to use recommended paper.
Service mode (COPIER> ADJUST> MISC>ATT-RTN)	12	Does the problem occur only in single-sided copying or when copying on the first side of a double-sided copy?	YES	Go to step 16. (Set COPIER>ADJUST> MISC>ATT-RTN1 to '1' in service mode.
	13	Does the problem occur only on the second side of a double-side copy?	YES	Set COPIER>ADJUST> MISC>ATT-RTN2 to '1'.

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<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>Service mode (COPIER> ADJUST>MISC> ATT-RTN)</td><td>14</td><td>Does the problem occur in single-sided copying mode or when copying on the first side of a double-sided copy and also when copying on both sides of a double-sided copy?</td><td>YES</td><td>Set COPIER>ADJUST> MISC>ATT-RTN1 and RTN2 to '1' in service mode.</td></tr>
<tr><td rowspan="2">Service mode (COPIER> ADJUST>HV-ATT; attraction high-voltage output adjustment mode)</td><td rowspan="3">15</td><td rowspan="3">Increase the setting of COPIER>ADJUST>HAV-ATT>ATT-N1 or ATT-N2. Is the problem corrected?
ATT-N2: if the problem occurs in plain paper mode and, in addition, in single-sided copying mode or when copying on the 1st side of a double-sided copy
ATT-N2: if the problem occurs when copying on the 2nd side of a double-sided copy.</td><td>YES</td><td>End.
Settings: -5 to +5
Unit: 2 µA</td></tr>
<tr><td>NO</td><td>Check the attraction high-voltage system and the internal/external static eliminator high-voltage system.</td></tr>
<tr><td>Service mode (COPIER> ADJUST>HV-ATT; attraction high-voltage output adjustment mode)</td><td rowspan="2">Increase the setting of ATT-xx shown below according to the type of paper for which the problem occurs. Is the problem corrected?
<table><tr><td>ATT-T1</td><td>thick paper; in single-sided copying mode or when copying on the 1st side of a double-sided copy</td></tr><tr><td>ATT-T2</td><td>thick paper; when copying on the 2nd side of a double-sided copy</td></tr><tr><td>ATT-OHP</td><td>when copying on a transparency</td></tr><tr><td>ATT-S1</td><td>when copying on special paper 1</td></tr><tr><td>ATT-S2</td><td>when copying on special paper 2</td></tr></table></td><td>YES</td><td>End.
Settings: -5 to +5
Unit: 2 µA</td></tr>
<tr><td>Attraction high-voltage system, internal/external static eliminator high-voltage system</td><td>NO</td><td>Check the attraction high-voltage system and the internal/external static eliminator high-voltage system.</td></tr>
</table>

Note: For steps 12 through 14, be sure to advise the user that the copier's productivity will decrease.

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49 The pre-exposure lamp fails to turn off.

Cause	Step	Checks	Yes/No	Action
Pre-exposure lamp (LA1)	1	Turn off the power switch, and disconnect J1008 of the DC driver PCB. Set the meter range to x100 Ω, and measure the resistance between J1008-A1 and -A2 on the harness side. Is it about 20Ω?	NO	Check the wiring from J1008 to the pre-exposure lamp; if normal, replace the pre-exposure lamp.
Pre-exposure lamp (LA1)	2	Connect J1008, and turn on the power switch. Set the meter range to 30 VDC, and measure the voltage between J1008-A1 (+; 24V) and J1008-A2 (-; PELA1ON). Does it change from about 0 to about 24 V when the main motor starts to rotate?	YES	Replace the pre-exposure lamp.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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50 The fixing heater fails to turn on.

Cause	Step	Checks	Yes/No	Action
Connector	1	Are the fixing drawer connector J18 of the transfer drum frame and the connector J1024 of the DC driver PCB connected securely?	NO	Connect the connectors properly.
----------	2	Slide out the transfer drum frame. Set the meter range to x1Ω, and connect the meter probes to the following terminals of the fixing drawer connector; does the index of the meter swing? J18-1 and -3 J18-2 and -4	YES	Go to step 8.
Thermal switch (TP2, TP3)	3	Is there electrical continuity in the thermal switch?	NO	Replace the thermal switch.
Thermistor (THM1, THM2, THM3, THM4)	4	Set the meter range to x1Ω, and connect the meter probes to the following terminals of the fixing drawer connector; does the meter index swing? THM1: J500-A4 and -A5 THM2: J500-B7 and -B8 THM3: J500-A2 and -A3 THM4: J500-B9 and -B10	YES	Replace the thermistor.
Upper heater (H1)	5	Does the index of the meter swing when the meter probes are connected to the electrodes on both ends of the upper heater?	NO	Check the heater to see if it is mounted properly; if normal, replace the upper heater.
Lower heater (H2)	6	Does the index of the meter swing when the meter probes are connected to the electrodes on both ends of the lower heater?	NO	Check the heater to see if it is mounted properly; if normal, replace the lower heater.
AC harness			YES	Check the AC harness inside the fixing assembly.

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Cause	Step	Checks	Yes/No	Action
AC power supply	7	Slide in the transfer drum frame, and turn on the power switch. Set the meter range to 250 VAC, and connect the meter probes to the following terminals of the faston of the AC power cut relay (RL1); does the index of the meter swing? Terminals 6 and 8 of RL1	NO	Check the power switch (SW1) and the AC power cut relay (RL1); if normal, see "AC power is absent."
SSR1	8	Set the meter range to 10 VDC, and connect the meter probes to the following terminals of the DC driver PCB; does the index of the meter indicate about +5 V? J1024-B1 and B4 (GND) J1024-B2 and -B4 (GND)	YES	Check the wiring from the AC power cut relay (RL1) to SSR1 and from SSR1 to the fixing assembly drawer connector; if normal, replace SSR1.
DC power supply PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

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51 The drum heater fails to operate.

Cause	Step	Checks	Yes/No	Action
Environment switch (SW6)	1	Turn off the environment switch. Is the problem corrected?	YES	End. (The heater will remain powered at all times).
AC fuse PCB	2	Is there electrical continuity between J14-1 and -3 of the AC fuse PCB?	NO	Find out the cause, and replace the AC fuse PCB.
Drum heater (H3)	3	Remove the drum heater, and set the meter range to x100Ω, and connect the meter probes to J22-1 and J22-3 of the heater; does the index of the meter swing?	NO	Replace the drum heater.
Thermistor (TH)	4	Set the meter range to x100Ω, and connect the meter probes to J22-5 and J22-6. Does the meter index swing?	NO	Replace the drum heater.
Connector, wiring	5	Are the connection and wiring between the following connectors normal? J9, J5, J21, J22 · environment switch · SSR2 (100/120-V model only) · drum heater	NO	Connect the connectors properly.
Drum heater brush	6	Disconnect the power plug, and remove the flywheel. Is the contact of the drum heater brush normal?	NO	Mount the brush properly. Or, replace the brush.
Drum heater controller PCB	7	Replace the drum heater controller PCB. Is the problem corrected?	YES	End.
SSR2 (100/120-V model only)	8	Mount the drum heater and the flywheel, and connect the power plug. Set the meter range to 12 VDC, and measure the voltage between J1025-1 (+; DRHOFF) and J1025-3 (-; GND) of the DC driver PCB. Is it about 0 V?	YES	Replace SSR2.
DC driver PCB, CPU PCB			NO	Replace the DC driver PCB or the CPU PCB.

Note: Step 8 applies to the 100/120-V model only.

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52 The cassette heater fails to operate.

Cause	Step	Checks	Yes/No	Action
Cassette heater switch (SW8)	1	Is the cassette heater switch on?	NO	Turn it on.
Environment switch (SW6)	2	Turn off the environment switch. Is the problem corrected?	YES	End. (The heater will remain powered at all times.)
AC fuse PCB	3	Is there electrical continuity between J14-1 and -3 of the AC fuse PCB?	NO	Replace the AC fuse PCB.
Connector, wiring	4	Are the connection and wiring between the following connectors normal? J15, J16, cassette heater switch, SSR2 (100/120-V model only), environment switch	NO	Connect the connector properly.
Cassette heater (H4, H5) Thermal switch (THS4, THS6)	5	Turn off the power switch, and disconnect the power plug; then, remove the cassette heater that fails to operate. Disconnect J52 (H4) or J53 (H5) of the cassette heater. Set the meter range to x1Ω, and connect the meter probes to the following terminals; does the index of the meter swing? Cassette Heater (H4) J52-1 and -3 Cassette Heater (H5) J53-1 and -3	NO	Replace the cassette heater.
SSR2 (100/120-V model only)	6	Mount the cassette heater, and connect the power plug. Set the meter range to 12 VDC, and measure the voltage between J1025-1 (+; DRHOFF) and J1025-3 (-; GND) of the DC driver PCB. Is it about 0 V?	NO	Replace SSR2.
DC driver PCB, CPU PCB			YES	Replace the DC driver PCB or the CPU PCB.

Note: Step 6 applies to the 100/120-V model only.

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53 The copier generates abnormal noise.

Cause	Step	Checks	Yes/No	Action
Original exposure system	1	Is the noise coming from the original exposure system?	YES	Check to see if there is an object which comes into contact with the original scanner motor, belt, cable, pulley, or rail.
Drum motor drive system	2	Is the noise coming from the drum unit?	YES	Check the drum motor drive system (drum motor, gear, photosensitive drum, transfer drum gear engagement, flywheel).
Fan	3	Is the noise coming from a fan?	YES	Check the fan.
Main motor drive system	4	Is the noise heard only when the main motor is rotating? (Note 1)	YES	Check the main motor drive system (developing assembly drive system, waste toner collection drive system, registration roller assembly). Check the photosensitive drum cleaning blade, side scraper, and side seal.
Pickup motor drive system	5	Is the noise heard when copy paper is picked up?	YES	Check the pickup motor drive system.
Fixing motor drive system	6	Is the noise heard from the fixing system?	YES	Check the fixing motor drive system.
Hopper motor drive system	7	Is the noise coming from the hopper unit?	YES	Check the hopper motor drive system.
Transfer drum cleaner locking motor drive system	8	Is the noise heard from the transfer drum?	YES	Check the transfer drum cleaner locking motor drive system.
Attraction roll unit	9	Is the noise heard from the attraction roller unit?	YES	Check the spring, gear, and attraction scraper.

Note: If abnormal noise is heard, perform the following:
1. If it is from the cleaning blade, make 10 solid copies using black only. If the problem cannot be corrected, dispose of the waste toner, and apply drum cleaner lubricant (FG2-1694) to the cleaning blade.
2. If it is from the side scraper, replace the side scraper, and apply a small amount of drum cleaner lubricant to the edge of the side scraper.
3. If it is from the side seal, clean the surface of the felt, and remove the drum cleaner lubricant.

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V. TROUBLESHOOTING FEEDING FAULTS

A. Copy Paper Jams

Jams in the copier tend to occur in any of the following locations:

1. Pickup assembly
2. Registration feeding assembly
3. Transfer drum/cleaning assembly
4. Separation/feeding assembly
5. Fixing/delivery assembly
6. Delivery vertical path/duplexing feeding assembly
7. Duplexing unit/re-pickup assembly

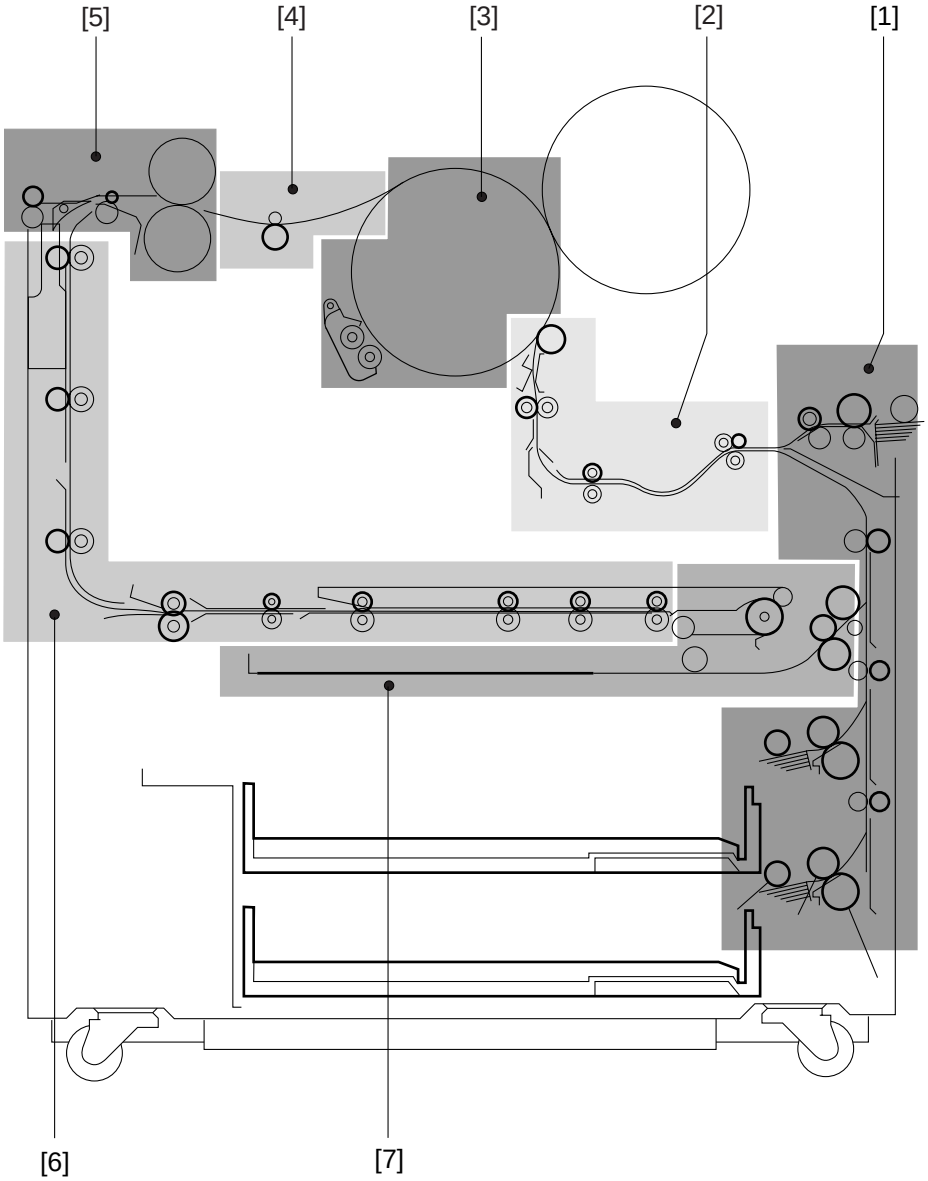

Figure 13-501

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You can check the location and the type of jam in the copier using its service mode (COPIER>DISPLAY>JAM).

First 2 Digits: Type of jam

Code	Type	Code	Type
01xx	Delay	05xx	Sorter
02xx	Stationary	EExx	Service call
03xx	Residual	FFxx	Door open
04xx	Service mode		

Table 13-501a

Last 2 Digits: Jam Sensor

Code	Sensor	Code	Sensor
xx01*	Pickup vertical path sensor 3 (PS27)	xx50	Post-transfer paper sensor (PS6)
xx02*	Pickup vertical path sensor 2 (PS26)	xx51	Pre-transfer paper sensor (PS5)
xx03*	Pickup vertical path sensor 1 (PS21)	xx52	Pre-cleaning paper sensor (PS71)
xx04*	Re-pickup vertical path sensor (PS28)	xx60	Separation sensor (PS7)
xx05	Deck pickup sensor ((PS101)	xx61	Internal delivery sensor (PS12)
xx06	Multifeeder pickup sensor (PS9)	xx70	External delivery sensor (PS31)
xx09	Pickup vertical path sensor 3 (PS27)	xx80	Delivery vertical path sensor 1 (PS32)
xx10	Pickup path sensor 2 (PS26)	xx81	Delivery vertical path sensor 2 (PS33)
xx11	Pickup vertical path sensor 1 (PS21)	xx82	Duplexing inlet paper sensor (PS37)
xx12	Re-pickup feeding path sensor (PS28)	xx83	Duplexing path paper sensor (PS34)
xx20	Transparency sensor (PS69)	xx84	Duplexing reversal paper sensor (PS35)
xx30	Pre-registration sensor (PS30)	xx90	Buffer path unit sensor assembly
xx40	Registration sensor (PS70)		

* At time of pickup.

Table 13-501b

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1 Pickup Assembly

Cause	Step	Checks	Yes/No	Action
----------	1	Is the paper from a cassette?	NO	Go to step 11.
Cassette	2	Is the cassette set in the copier properly?	NO	Set the cassette properly. (Check to make sure that there is no foreign matter inside the cassette.)
Copy paper	3	Is the copy paper curled or wavy?	YES	Replace the copy paper. Advise the user on the correct method of storing paper.
	4	Try paper of a type recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
Transparency	5	Is the transparency of a recommended type? Is it placed in the correct orientation?	NO	Instruct the user to use recommended transparencies and to place them correctly.
DC driver PCB CPU PCB, pickup clutch	6	Does the pickup roller of the selected pickup assembly rotate during copying operation?	NO	See "Pickup fails."
Pickup roller	7	Is the pickup roller of the cassette pickup assembly deformed or worn?	YES	Replace the pickup roller.
Separation roller	8	Is the separation roller of the cassette pickup assembly deformed or worn?	YES	Replace the separation roller.
Feed roller	9	Is the feed roller of the cassette pickup assembly deformed or worn?	YES	Replace the feed roller.
Paper guide plate	10	Is the operation of each sensor (PS21, PS26, PS27) of the pickup vertical path assembly normal?	YES	Check each paper guide plate for foreign mater and deformation.
Pickup vertical path 1/2/3/ sensor			NO	Check the sensor lever and wiring; if normal, replace the sensor.

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Cause	Step	Checks	Yes/No	Action
----------	11	Try manual copying. Does the pickup roller of the multifeeder start to rotate?	NO	See "Pickup fails (multifeeder)."
Copy paper	12	Try paper of a type recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
Transparency	13	Is the transparency of a recommended type and placed in the correct orientation?	NO	Advise the user to use recommended transparencies and to place them correctly.
Special backing sheet	14	Is the special backing sheet used under the transparencies?	NO	Instruct the user to use the special backing sheet.
Multifeeder pickup roller	15	Is the pickup roller of the multifeeder deformed or worn?	YES	Replace the multifeeder pickup roller.
Paper guide plate	16	Is the operation of the multifeeder pickup sensor (PS9) normal?	YES	Check each paper guide for foreign matter and deformation.
Multifeeder pickup sensor			NO	Check the sensor lever and wiring; if normal, replace the sensor.

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2 Registration Feeding Assembly

Cause	Step	Checks	Yes/No	Action
Copy paper	1	Is the copy paper curled or wavy?	YES	Replace the paper. Advise the user on the correct method of storing paper.
	2	Try paper of a type recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
Transparency	3	Is the transparency of a recommended type and placed in the correct orientation?	NO	Advise the user to use recommended transparencies and to place them correctly.
Pre-registration roller 1/2 drive assembly, registration roller drive assembly	4	Do the pre-registration roller 1/2 drive assembly and the registration roller drive assembly operate normally?	NO	See "The registration roller fails to rotate."
Registration roller	5	Is the registration roller deformed or worn?	YES	Replace the registration roller.
Attraction	6	Is the jam paper attracted to the transfer drum?	NO	See "Attraction fails."
Attraction roller	7	Is the attraction roller deformed or worn?	YES	Replace the deformed or worn roller.
Paper guide plate	8	Is the operation of each sensor (PS30, PS69, PS70) of the registration feeding assembly normal?	YES	Check each paper guide plate for foreign matter and deformation.
Pre-registration sensor, transparency sensor, registration sensor			NO	Check the sensor lever and wiring; if normal, clean or replace the sensor.

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3 Transfer Drum/Cleaning Assembly

Cause	Step	Checks	Yes/No	Action
Transfer drum sheet	1	Is the transfer drum sheet soiled or deformed?	YES	Replace the transfer drum sheet.
Internal/external static eliminator	2	Is the internal/external static eliminator operating normally?	NO	Check the internal/ external static eliminator. If leakage is noted, replace it.
Pre-transfer/post-transfer sensor	3	Is the pre-transfer/post-transfer sensor (PS5/PS6) operating normally?	NO	Check the wiring; if normal, replace the sensor.
Attraction/transfer cam HP sensor	4	Is the attraction/transfer cam HP sensor (PS8) operating normally?	NO	Check the wiring; if normal, replace the sensor.
Attraction brush, transfer blade	5	Are the brush and the blade operating normally?	NO	Check the brush and the blade; if normal, replace the attraction/transfer locking cam motor (PM7).
Pre-cleaning paper sensor	6	Is the pre-cleaning paper sensor operating normally?	NO	Check that there is no paper in the cleaner unit; then, clean the sensor and execute COPIER>FUNCTION> SNS-ADJ>CLN-OFST. Or, replace the sensor.
Internal brush	7	Is the internal brush operating normally?	NO	Check the internal brush; if normal, replace the attraction/transfer locking cam motor (PM7).
Transfer drum, high-voltage cable	8	Is leakage caused by damage to the faston of the transfer high-voltage cable noted?	YES	Replace the faston of the high-voltage cable.
	9	Is leakage caused by deformation of the electrode of the charging block noted?	YES	Correct the electrode plate of the charging block.
Transfer drum cleaner drive assembly	10	Is there a fault in the transfer drum cleaner drive assembly? Is it subjected to overload?	YES	Replace any faulty part. Remove the cause of the fault.
Transfer driver PCB DC driver PCB			NO	Replace the transfer driver PCB or the DC driver PCB.

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4 Separation/Feeding Assembly

Cause	Step	Checks	Yes/No	Action
Separation charging assembly	1	Is the separation charging assembly operating normally?	NO	Check the separation charging assembly.
Separation claw solenoid (SL4)	2	Is the separation claw solenoid (SL4) operating normally?	NO	Check the solenoid.
Separation claw	3	Is the separation claw worn or deformed?	YES	1. Replace the separation claw. 2. If dirt is found, clean it with solvent.
Separation push-up solenoid (SL3)	4	Is the separation push-up solenoid (SL3) operating normally?	NO	Check the solenoid.
Separation push-up roller	5	Is the separation push-up roller worn or deformed?	YES	Replace the separation push-up roller.
Separation sensor (PS7)	6	Is the separation sensor (PS7) operating normally?	NO	Check the sensor lever and wiring; if normal, replace the sensor.
Postcard feeding unit (100V model only)	7	Is the postcard feeding unit operating normally?	NO	Check the postcard feeding unit and the postcard feeding clutch (CL18). Check the fixing motor (M5).
Paper guide plate			YES	If foreign matter is found on the paper guide plate, remove it; if deformation is found, correct it.

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5 Fixing/Delivery Assembly

Cause	Step	Checks	Yes/No	Action
Separation claw	1	Is the separation claw soiled?	YES	Clean it with solvent.
Fixing roller drive assembly	2	Does the fixing roller rotate smoothly?	NO	Check the fixing roller drive assembly.
Fixing upper/ lower roller	3	Is the upper/lower roller deformed or scratched?	YES	Replace the roller.
Fixing inlet guide	4	Is the inlet guide soiled with toner or the like?	YES	Clean the guide with solvent.
Nip	5	Is the nip (pressure) as indicated?	NO	Adjust the nip.
Fixing cleaning belt	6	Is the cleaning belt taken up normally?	NO	Check the take-up mechanism of the cleaning belt.
Fixing thermistor	7	Is the surface of the thermistor soiled?	YES	Clean the thermistor with solvent.
Delivery sensor lever	8	Does the delivery sensor lever move smoothly?	NO	Adjust the lever so that it moves smoothly.
Internal/external delivery sensor	9	Is the internal/external delivery sensor (PS12/PS31) operating normally?	NO	Replace the sensor.
Internal/external delivery roller drive assembly	10	Does the internal/external delivery roller rotate smoothly?	NO	Check the delivery roller drive assembly.
Delivery paper deflecting plate	11	Is the delivery paper deflecting plate operating normally?	NO	Check the delivery plate paper deflecting solenoid (SL10).
Oil applying assembly			YES	1. Check the oil applying mechanism. 2. Check the amount of silicone oil.

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6 Delivery Vertical Path/Duplexing Feeding Assembly

Cause	Step	Checks	Yes/No	Action
Delivery paper deflecting plate	1	Is the delivery paper deflecting plate operating normally?	NO	Check the delivery paper deflecting plate solenoid (SL10).
Delivery vertical path roller 1/2/3	2	Is the delivery vertical path roller operating normally?	NO	Check the fixing motor and the duplexing motor driver assembly; if normal, replace the delivery vertical path clutch (CL19).
External delivery sensor Delivery vertical path 1 sensor Delivery vertical path 2 sensor	3	Is each sensor (PS31, PS32, PS33) operating normally?	NO	Check the sensor lever and wiring; if normal, replace the sensor.
Duplexing feeding drive assembly	4	Is the duplexing feeding assembly operating normally?	NO	Check the duplexing motor drive assembly.
Duplexing feeding assembly sensor	5	Is the sensor (PS34, PS37) of the duplexing feeding assembly operating normally?	NO	Check the sensor lever and wiring; if normal, replace the sensor.
Paper guide plate			YES	Check each paper guide plate and the duplexing feeding assembly or foreign matter and deformation.

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7 Duplexing Unit/Re-Pickup Assembly

Cause	Step	Checks	Yes/No	Action
Duplexing unit	1	Is the duplexing unit set in the copier correctly?	NO	Set the duplexing unit correctly. Check to make sure that there is no foreign matter inside the unit.
Copy paper	2	Try paper of a type recommended by Canon.	YES	Advise the user to use recommended paper.
Duplexing reversing roller	3	Is the duplexing reversing roller deformed or soiled?	YES	Replace the duplexing reversing roller.
Duplexing paper feed roller	4	Is the jam around the duplexing feed roller area?	YES	Check the duplexing paper feed roller solenoid (SL13).
Paper sensor (duplexing tray assembly)	5	Is the paper sensor (PS35, PS36) of the duplexing tray assembly operating normally?	NO	Check the lever and wiring; if normal, replace the sensor.
Paper jogging guide plate	6	Is the paper jogging guide plate operating normally?	YES	Check the paper jogging guide motor (PM14); if normal, replace the home position sensor (PS40).
Stopper plate	7	Is the stopper plate operating normally?	NO	Check the stopper plate solenoid (SL12).
Duplexing driver PCB, clutch	8	Does the duplexing paper feed roller rotate?	NO	See "Pickup fails."
Duplexing paper feed roller	9	Is the duplexing paper feed roller deformed or worn?	NO	Replace the duplexing paper feed roller.
Duplexing separation roller	10	Is the duplexing separation roller deformed or worn?	NO	Replace the duplexing separation roller.
Duplexing feed roller	11	Is the duplexing feed roller deformed or worn?	YES	Replace the duplexing feed roller.
			NO	Check each paper plate or duplexing tray assembly for foreign matter and deformation.

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B. Feeding Faults

1 Double Feeding

Cause	Step	Checks	Yes/No	Action
Separation roller	1	Is the separation roller deformed or worn?	YES	Replace the separation roll.
Pressure spring			NO	Adjust the position of the pressure spring. Replace the pressure spring.

2 Wrinkles

Cause	Step	Checks	Yes/No	Action
Cassette pickup assembly, Duplexing assembly	1	Turn off the power switch while copy paper is moving through the pickup vertical path/registration feeding assembly. At this time, is the copy paper wrinkled? Or, is the copy paper askew?	YES	Check each pickup assembly and the registration roller assembly.
Copy paper	2	Try copy paper fresh out of package. Is the problem corrected?	YES	The copy paper may be moist. Advise the user on the correct method of storing paper.
	3	Try paper of a type recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
			NO	Check to see if the cassette heater is operating normally.
Fixing inlet guide	4	Is the fixing inlet guide soiled with toner?	YES	Clean the guide with solvent.
Nip (fixing)	5	Is the nip (pressure) as indicated?	NO	Adjust the nip.
Fixing upper/ lower roller			YES	Try replacing the upper and lower rollers in turns.

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VI. ARRANGEMENT OF ELECTRICAL PARTS

A. Sensors

1. CLC1120/1130

PS1	Original scanner home position sensor
PS2	Side A sensor
PS3	Side B sensor
PS4	C sensor
PS5	Pre-transfer paper sensor
PS6	Post-transfer paper sensor
PS7	Separation sensor
PS8	Attraction/transfer locking cam HP sensor
PS9	Multifeeder pickup sensor
PS10	Fixing oil level sensor
PS11	Fixing upper cleaning belt level sensor
PS12	Internal delivery sensor
PS15	Multifeeder paper sensor
PS17	Multifeeder lifter H sensor
PS18	Multifeeder lifter L sensor
PS19	Cassette 1 lifter position sensor
PS20	Cassette 1 paper sensor
PS21	Pickup vertical path 1 sensor
PS22	Cassette 2 lifter position sensor
PS23	Cassette 3 lifter position sensor (CLC1130 only)
PS24	Cassette 2 paper sensor
PS25	Cassette 3 paper sensor (CLC1130 only)
PS26	Pickup vertical path 2 sensor
PS27	Pickup vertical path 3 sensor (CLC1130 only)
PS30	Pre-registration sensor
PS31	External delivery sensor

Table 13-601a (CLC1120/1130)

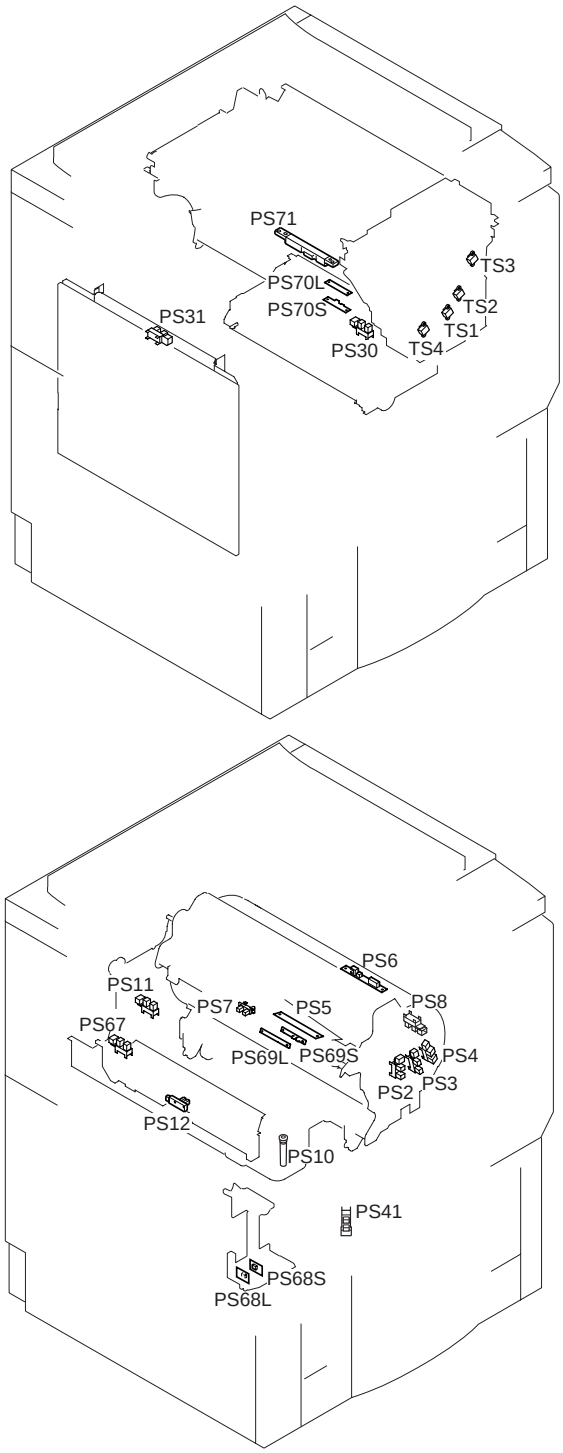

Figure 13-601a (CLC1120/1130)

PS41	Right front cover sensor
PS42	Left front cover sensor
PS43	Delivery cover sensor
PS44	Pickup cover sensor
PS46	Cassette 1 open/closed sensor
PS47	Cassette 2 open/closed sensor
PS48	Cassette 3 open/closed sensor (CLC1130 only)
PS49	M developing assembly HP sensor
PS51	C developing assembly HP sensor
PS53	Y developing assembly HP sensor
PS55	Bk developing assembly HP sensor
PS57	Transfer drum HP sensor
PS59	Transfer drum cleaner HP sensor
PS62	Multifeeder tray open/closes sensor
PS67	Fixing lower cleaning belt length sensor
PS68L/S	Waste toner case full sensor
PS69L/S	Transparency sensor
PS70L/S	Registration sensor
PS71	Pre-cleaning paper sensor
PSU2	Cassette 2 paper length sensor (CLC1120 only)
PSU3	Cassette 3 paper length sensor (CLC1130 only)
VR2	Cassette 1 paper level detecting VR
VR3	Cassette 2 paper width detecting VR (CLC1120 only)
VR4	Cassette 2 paper level detecting VR
VR5	Cassette 3 paper width detecting VR (CLC1130 only)
VR6	Cassette 3 paper level detecting VR (CLC1130 only)
VR7	Multifeeder paper width detecting VR
TS1	M toner level sensor
TS2	C toner level sensor
TS3	Y toner level sensor
TS4	Bk toner level sensor
UN10	Environment sensor

Table 13-601b (CLC1120/1130)

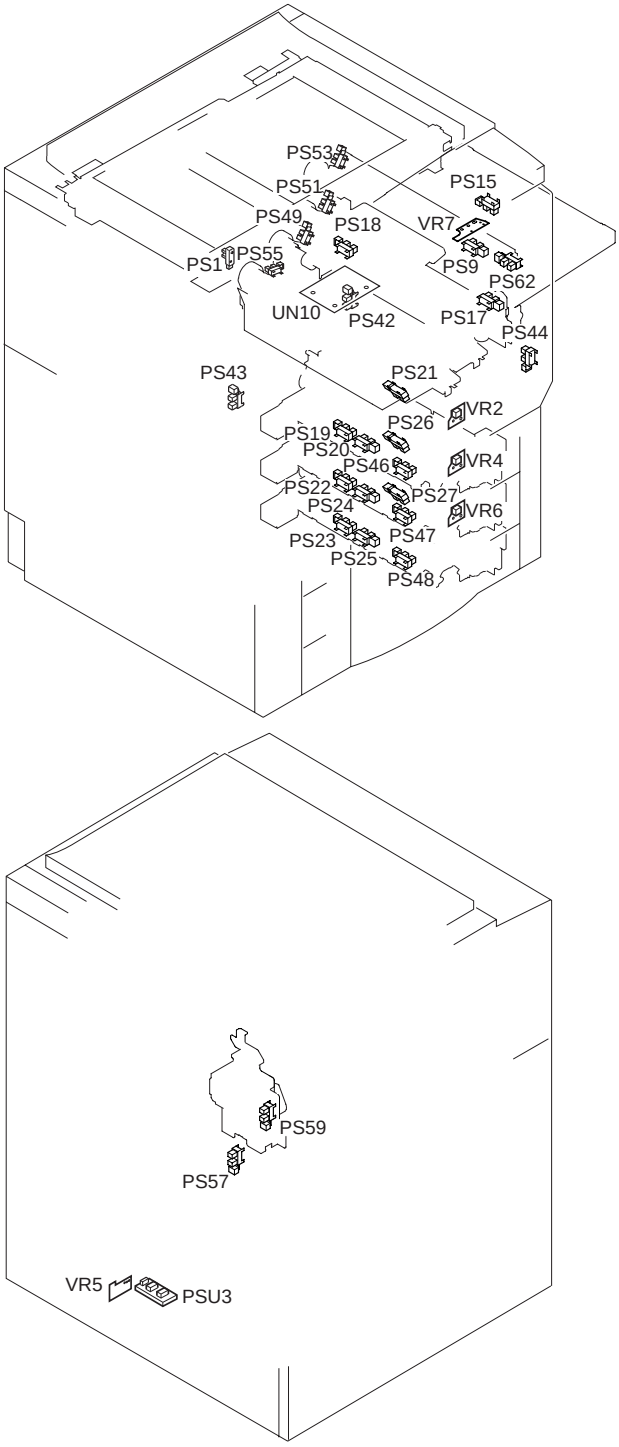

Table 13-601b (CLC1120/1130)

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2. CLC1150

PS1	Original scanner home position sensor
PS2	Side A sensor
PS3	Side B sensor
PS4	C sensor
PS5	Pre-transfer paper sensor
PS6	Post-transfer paper sensor
PS7	Separation sensor
PS8	Attraction/transfer locking cam HP sensor
PS9	Multifeeder pickup sensor
PS10	Fixing oil level sensor
PS11	Fixing upper cleaning belt length sensor
PS12	Internal delivery sensor
PS15	Multifeeder paper sensor
PS17	Multifeeder lifter H sensor
PS18	Multifeeder lifter L sensor
DPS22	Cassette 1 lifter position sensor
DPS23	Cassette 2 lifter position sensor
DPS24	Cassette 1 paper sensor
DPS25	Cassette 2 paper sensor
PS26	Pickup vertical path 1 sensor
PS27	Pickup vertical path 2 sensor
PS28	Re-picup vertical path sensor
PS30	Pre-registration sensor
PS31	External delivery paper sensor
PS32	Delivery vertical path 1 sensor
PS33	Delivery vertical path 2 sensor
PS34	Duplexing path paper sensor
PS35	Duplexing reversal paper sensor
PS36	Duplexing tray paper sensor

Table 13-602a (CLC1150)

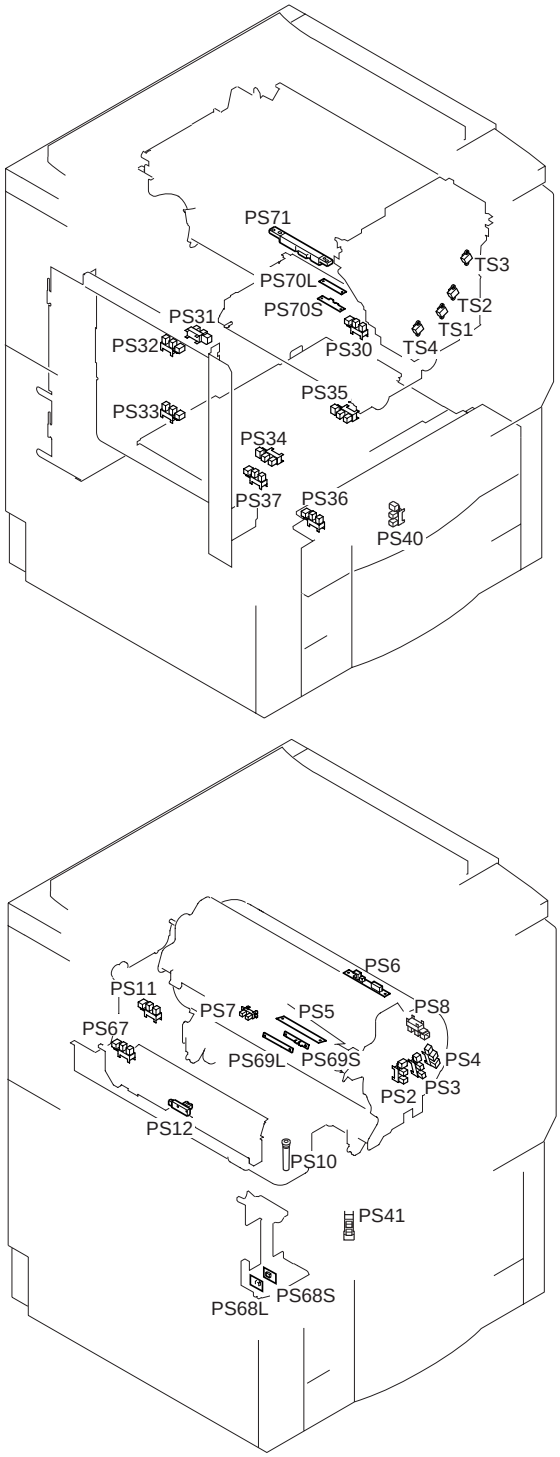

Figure 13-602a (CLC1150)

PS37	Duplexing inlet paper sensor
PS40	Paper jogging guide HP sensor
PS41	Right front cover sensor
PS42	Left front cover sensor
PS43	Delivery cover sensor
PS44	Pickup cover sensor
DPS47	Cassette 1 open/closed sensor
DPS48	Cassette 2 open/closed sensor
PS49	M developing assembly HP sensor
PS51	C developing assembly HP sensor
PS53	Y developing assembly HP sensor
PS55	Bk developing assembly HP sensor
PS57	Transfer drum HP sensor
PS59	Transfer drum cleaner HP sensor
PS62	Multifeeder tray open/closed sensor
PS67	Fixing lower cleaning belt length sensor
PS68L/S	Waste toner case full sensor
PS69L/S	Transparency sensor
PS70L/S	Registration sensor
PS71	Pre-cleaning paper sensor
DPSU3	Cassette 2 paper length sensor
DVR4	Cassette 1 paper level detecting VR
DVR5	Cassette 2 paper width detecting VR
DVR6	Cassette 2 paper level detecting VR
VR7	Multifeeder paper width detecting VR
TS1	M toner level sensor
TS2	C toner level sensor
TS3	Y toner level sensor
TS4	Bk toner level sensor
UN10	Environment sensor

Table 13-602b (CLC1150)

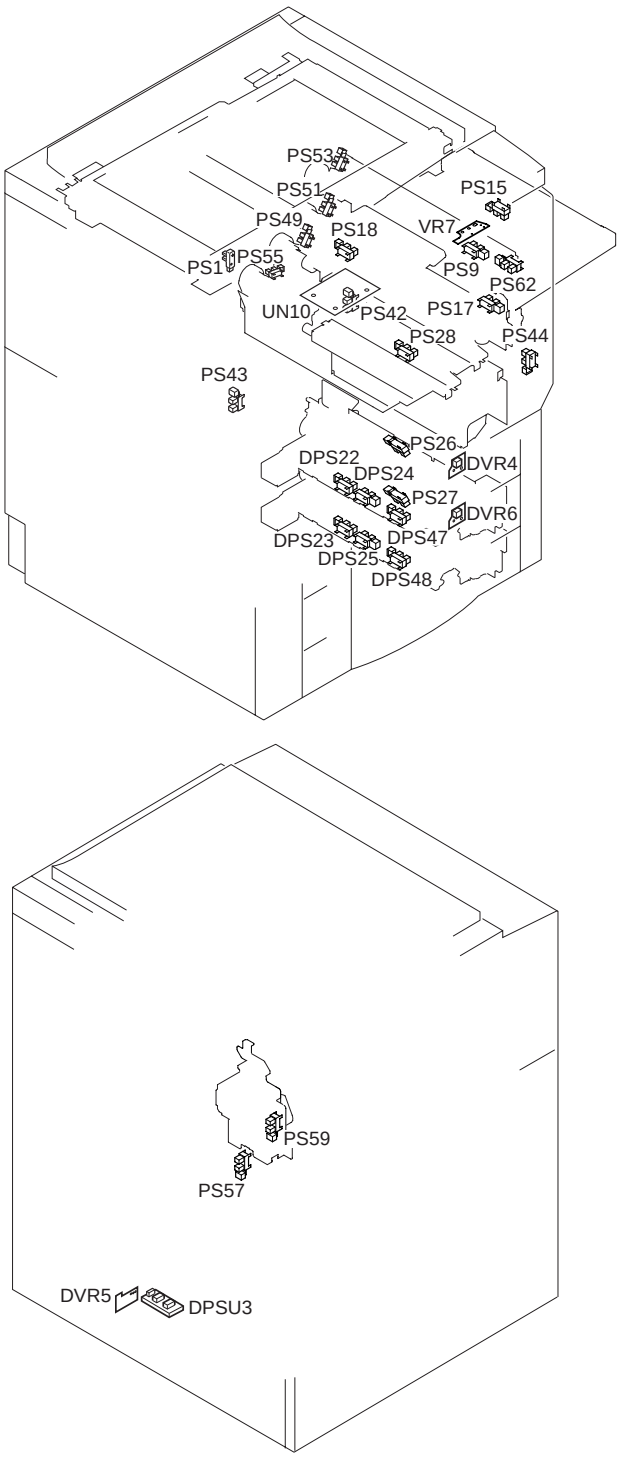

Figure 13-602b (CLC1150)

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B. Thermistors, Lamps, and Heaters

THM1	Fixing upper thermistor 1
THM2	Fixing upper thermistor 2
THM3	Fixing lower thermsitor 3
THM4	Fixing lower thermistor 4
TP1	Scanner thermal switch 1
TP2	Fixing upper thermal switch
TP3	Fixing lower thermal switch
TP6	Scanner thermal switch 2
LA1	Pre-exposure lamp
LA2	Scanning lamp
H1	Fixing upper heater
H2	Fixing lower heater
H3	Drum heater
H4	Cassette heater 1
H5	Cassette heater 2
ELB	Leakage breaker
LF1	Noise filer
SSR1	Fixing heater SSR
SSR2	Drum, cassette, deck heater SSR
RL1	AC power cut relay
RL3	DC power cut relay
P1	Power cord
SW1	Power switch
SW2	Control switch
SW3	Transfer unit lever switch
SW4	Left front door switch
SW5	Delivery door switch
SW6	Environment switch
SW7	Waste toner feedscrew locked detecting switch
SW8	Cassette heater switch

Table 13-603

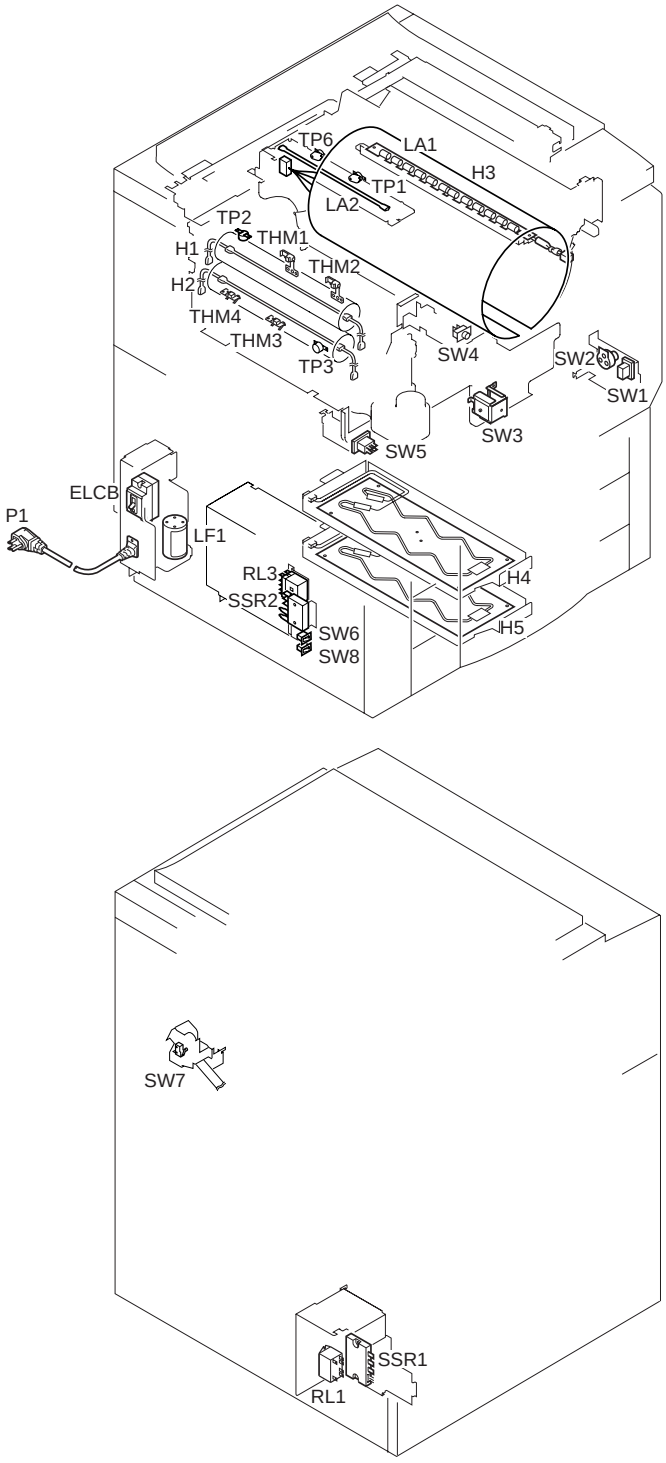

Figure 13-603

C. Clutches

1. CLC1120/1130

CL1	M developing cylinder clutch
CL2	C developing cylinder clutch
CL3	Y developing cylinder clutch
CL4	Bk developing cylinder clutch
CL5	M toner supply clutch
CL6	C toner supply clutch
CL7	Y toner supply clutch
CL8	Bk toner supply clutch
CL9	Registration clutch
CL10	Multifeeder feeding clutch
CL11	Cassette 1 pickup clutch
CL12	Cassette 2 pickup clutch
CL13	Cassette 3 pickup clutch (CLC1130 only)
CL16	Multifeeder pickup clutch
CL18	Postcard feeding clutch (100-V model only)

Table 13-604 (CLC1120/1130)

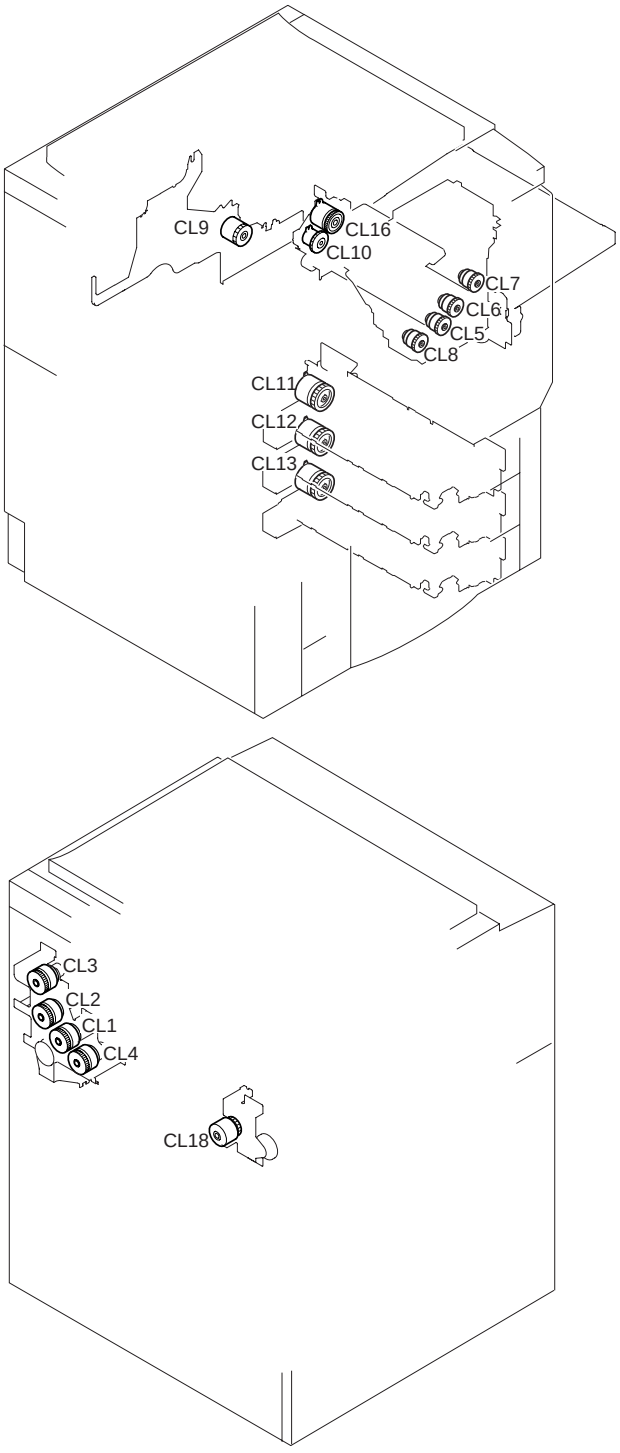

Figure 13-604 (CLC1120/1130)

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2. CLC1150

CL1	M developing cylinder clutch
CL2	C developing cylinder clutch
CL3	Y developing cylinder clutch
CL4	Bk developing cylinder clutch
CL5	M toner supply clutch
CL6	C toner supply clutch
CL7	Y toner supply clutch
CL8	Bk toner supply clutch
CL9	Registration clutch
CL10	Multifeeder feeding clutch
DCL12	Cassette 1 pickup clutch
DCL13	Cassette 2 pickup clutch
CL14	Duplexing feeding clutch
CL15	Re-pickup clutch
CL16	Multifeeder pickup clutch
CL18	Postcard feeding clutch ((100-V model only)
CL19	Delivery vertical path roller clutch

Table 13-605 (CLC1150)

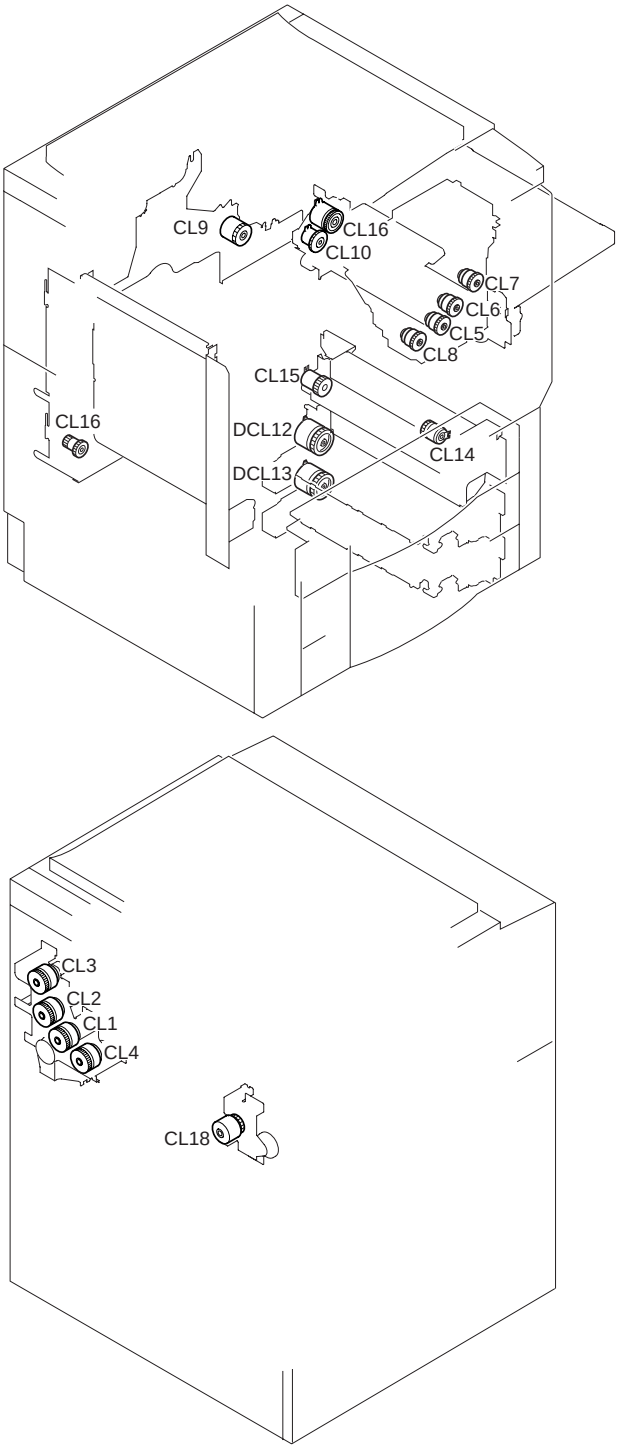

Figure 13-605 (CLC1150)

D. Solenoids

1. CLC1120/1130

SL1	Fixing upper cleaning belt solenoid
SL2	Fixing lower cleaning belt solenoid
SL3	Separation push-up solenoid
SL4	Separation claw solenoid
SL5	Registration roller releasing solenoid
SL6	Attraction roller solenoid
SL7	Pickup roller 1 solenoid
SL8	Pickup roller 2 solenoid
SL9	Pickup roller 3 solenoid (CLC1130 only)
SL14	Multifeeder pickup solenoid

Table 13-606 (CLC1120/1130)

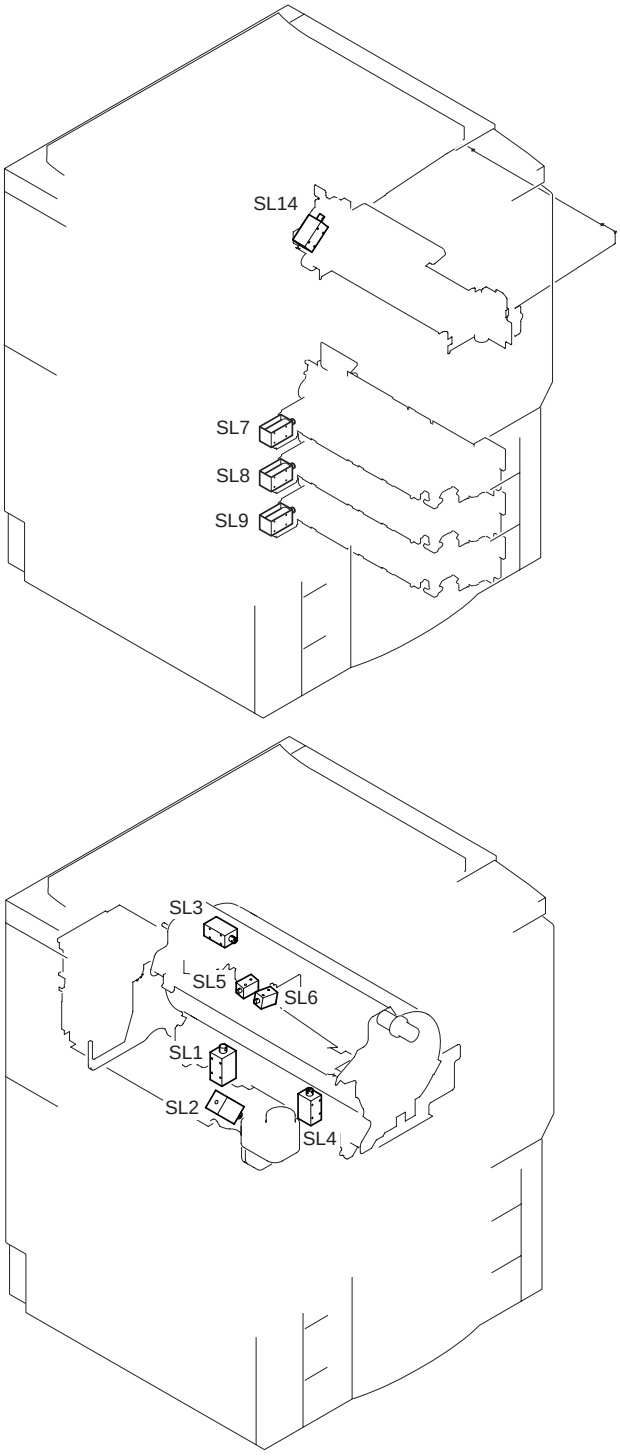

Figure 13-606 (CLC1120/1130)

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2. CLC1150

SL1	Fixing upper cleaning belt solenoid
SL2	Fixing lower cleaning belt solenoid
SL3	Separation push-up solenoid
SL4	Separation claw solenoid
SL5	Registration roller releasing solenoid
SL6	Attraction roller solenoid
DSL8	Pickup roller 1 solenoid
DSL9	Pickup roller 2 solenoid
SL10	Delivery paper deflecting plate solenoid
SL12	Stopper plate solenoid
SL13	Duplexing paper feed roller solenoid
SL14	Multifeeder pickup solenoid
SL15	Stacking guide plate solenoid

Table 13-607 (CLC1150)

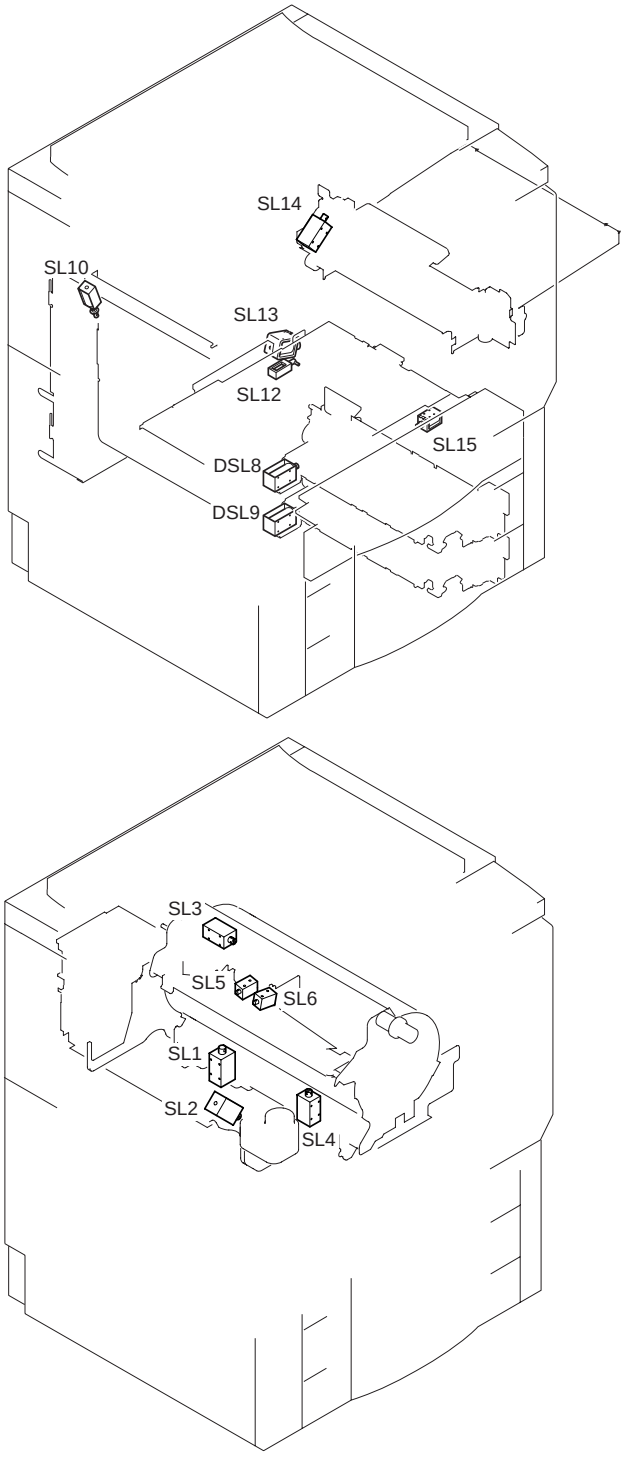

Figure 13-607 (CLC1150)

E. Fans

FM1	Original exposure system cooling fan 1
FM2	Exhaust discharge fan
FM3	Primary charging assembly fan
FM4	Laser scanner motor cooling fan
FM5	Ozone suction fan
FM6	Toner suction fan
FM7	IP cooling an
FM8	Electrical unit cooling fan
FM9	Power supply cooling fan 1
FM11	Delivery cooling fan
FM13	Power supply cooling fan 2
FM14	Original exposure system cooling fan 2
FM15	Original exposure system cooling fan 3
FM16	Back suction fan
FM17	Power cord mount cooling fan

Table 13-608

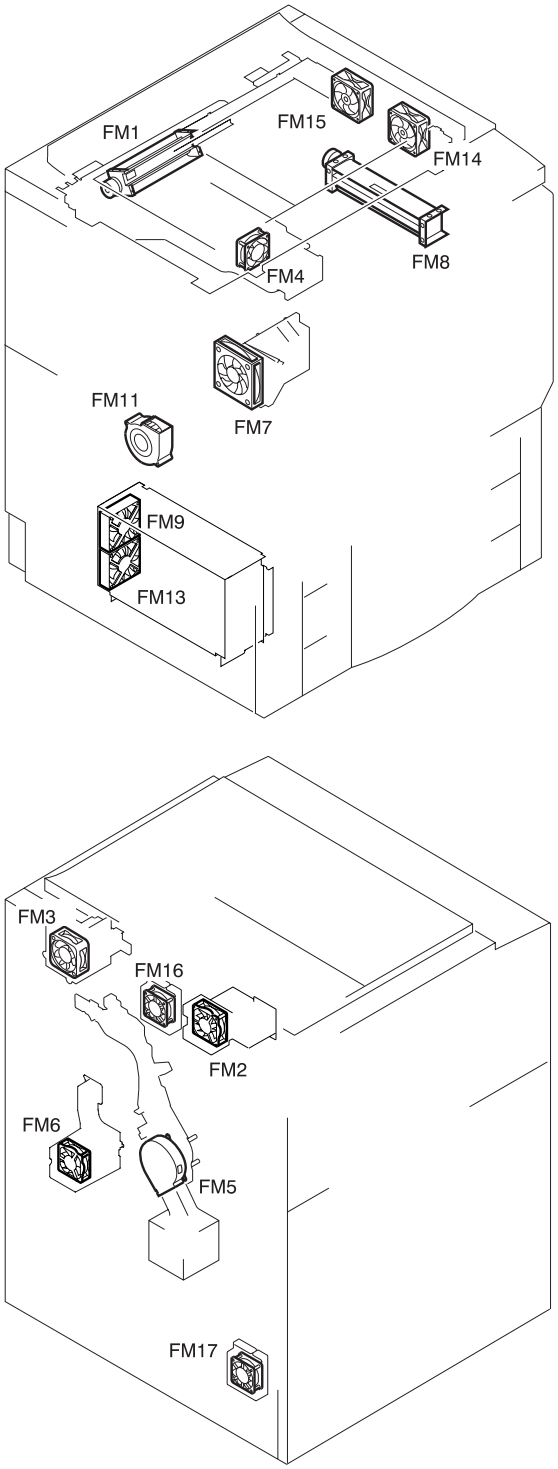

Figure 13-608

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F. Motors

M2	Drum motor
M3	Laser scanner motor
M4	Main motor
M5	Fixing motor
M6	Primary charging wire cleaning motor
M7	Cleaning blade reciprocating motor
M8	Transfer drum cleaning brush motor
M9	Polishing roller motor
M10	Hopper motor
M11	Cassette 1 lifter motor
M12	Cassette 2 lifter motor
M13	Cassette 3 lifter motor (CLC1130 only)
M15	Multifeeder lifter motor
PM1	M developing assembly locking motor
PM2	C developing assembly locking motor
PM3	Y developing assembly locking motor
PM4	Bk developing assembly locking motor
PM5	Transfer drum locking motor
PM6	Transfer drum cleaner locking motor
PM7	Attraction/transfer locking cam motor
PM8	Pre-registration motor 2
PM9	Pre-registration motor 1
PM10	Cassette 1 pickup motor
PM11	Cassette 2 pickup motor
PM12	Cassette 3 pickup motor (CLC130 only)
PM15	Original scanner motor

Table 13-609 (CLC1120/1130)

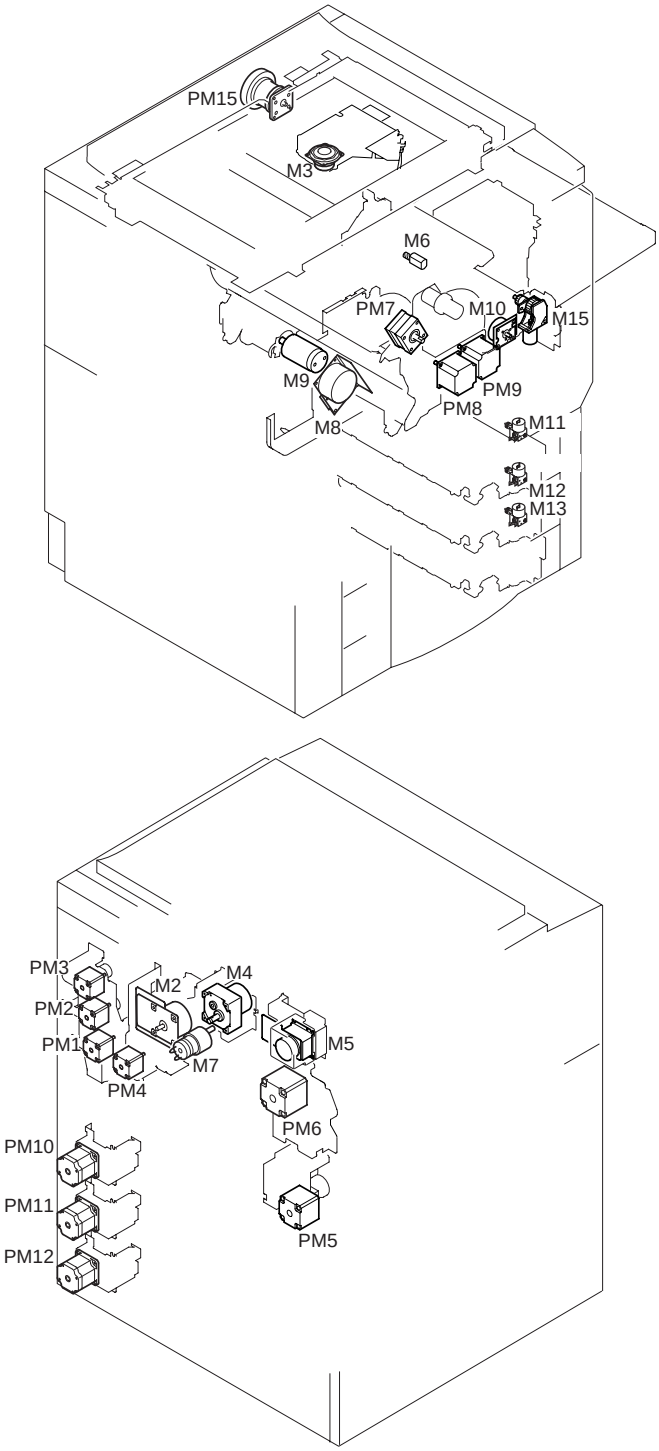

Figure 13-609 (CLC1120/1130)

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M2	Drum motor
M3	Laser scanner motor
M4	Main motor
M5	Fixing motor
M6	Primary charging wire cleaning motor
M7	Cleaning blade reciprocating motor
M8	Transfer drum leaner brush motor
M9	Polishing roller motor
M10	Hopper motor
DM12	Cassette 1 lifter motor
DM13	Cassette 2 lifter motor
M14	Duplexing motor
M15	Multifeeder lifter motor
PM1	M developing assembly locking motor
PM2	C developing assembly locking motor
PM3	Y developing assembly locking motor
PM4	Bk developing assembly locking motor
PM6	Transfer drum cleaner locking motor
PM7	Attraction/transfer locking cam motor
PM8	Pre-registration motor 2
PM9	Pre-registration motor 1
DPM11	Cassette 1 pickup motor
DPM12	Cassette 2 pickup motor
PM13	Re-pickup motor
PM14	Duplexing paper jogging motor
PM15	Original scanner motor

Table 13-610 (CLC1150)

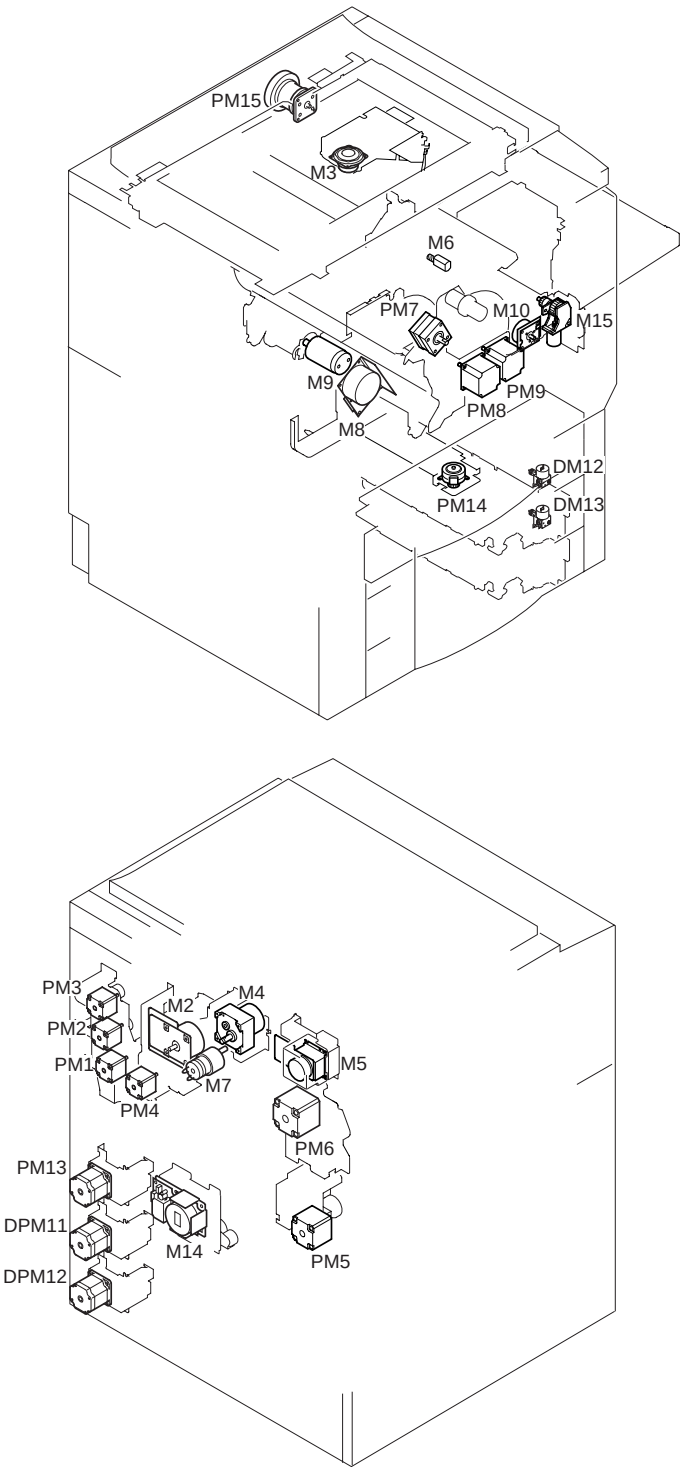

Figure 13-610 (CLC150)

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G. PCBs

1	CPU PCB
2	CCD/CCD driver PCB
3	Analog processor PCB
4	Image processor motherboard
5	Image processor main PCB
6	Image processor ECO PCB
7	ECO relay PCB
8	Laser controller PCB
9	Laser drive PCB
10	BD PCB
11	Original scanner motor driver PCB
12	Control panel PCB
13	Inverter PCB
14	Contrast VR PCB
15	Keypad PCB
16	ECO PCB
17	Memory PCB
8	Bi-Centronics I/F PCB
19	DC driver PCB
20	DC power supply PCB
21	AC fuse PCB
22	DC fuse PCB
23	Drum heater controller PCB
24	Oil pump driver PCB
25	Transfer driver PCB
26	Registration path driver PCB
27	Pickup driver PCB
28	Duplexing driver PCB (CLC1150 only)
29	Developing assembly locking driver PCB
30	Transfer assembly locking driver PCB

Table 13-611a

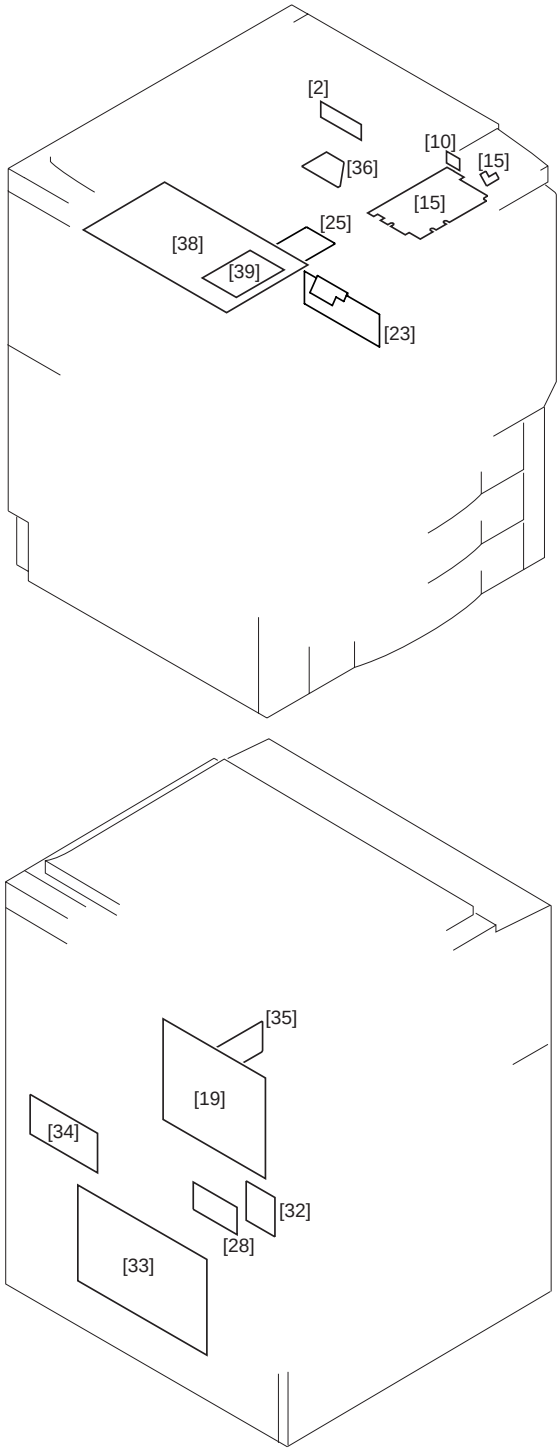

Figure 13-611a

31	Developing bias PCB
32	HVT-AC PCB
33	HVT-DC PCB
34	Potential measurement PCB
35	Main motor driver PCB
36	Laser scanner motor PCB
37	Hopper motor PCB
38	IP-ED/IF PCB (accessory)
39	IP-PRJ PCB (accessory)
40	Flicker controller PCB (230-V model only)
41	Transformer PCB

Table 13-611b

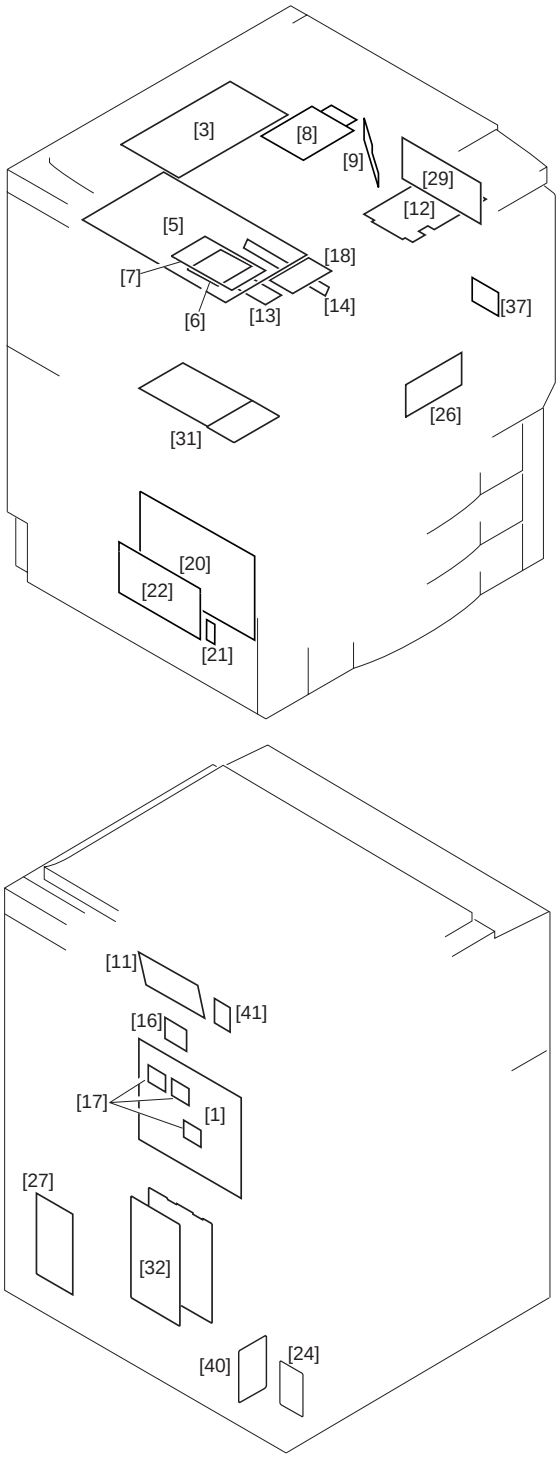

Figure 13-611b

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H. Paper Deck

1. Sensors and Switches

PS101	Deck pickup sensor
PS102	Deck paper absent sensor
PS103	Deck lifter upper limit sensor
PS104	Deck position sensor
PS105	Deck set sensor
PS107	Deck paper level upper sensor
PS108	Deck paper level lower sensor
PS109	Deck open sensor
SW100	Deck open switch
SW101	Deck open detecting switch
SW102	Deck lifter lower limit detecting switch

Table 13-612

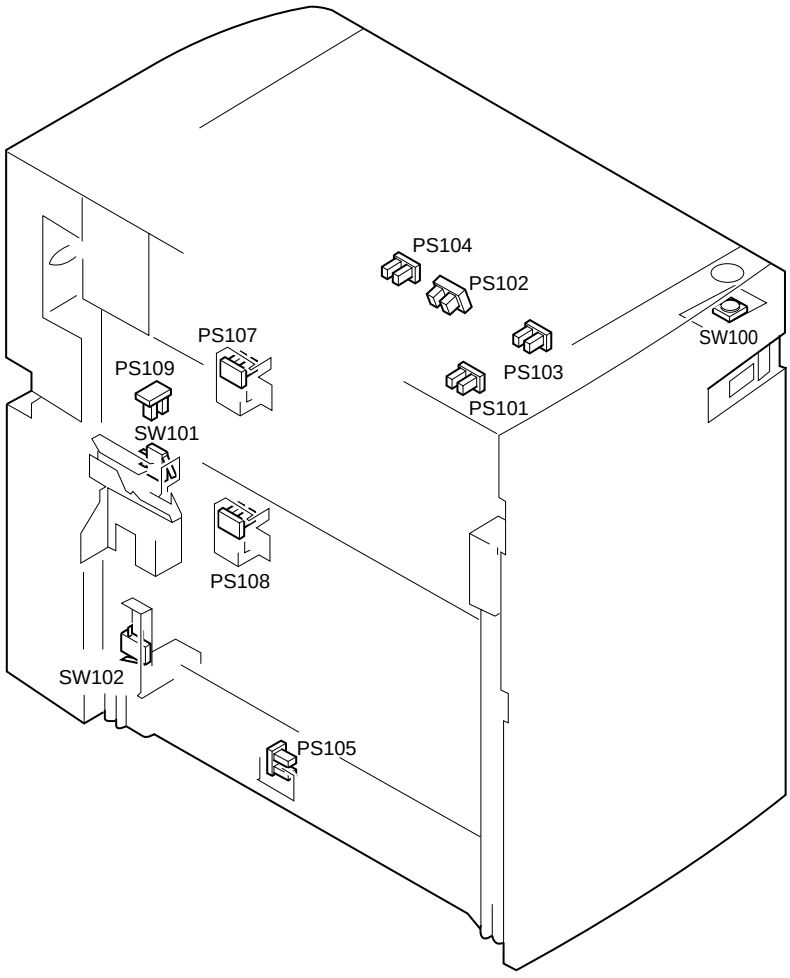

Figure 13-612

2. Motors, Clutches, Solenoids, and PCBs

PM101	Deck pickup motor
M101	Deck lifter motor
CL102	Deck pickup clutch
SL101	Deck pickup solenoid
SL102	Deck open solenoid
[1]	Deck driver PCB
[2]	Deck open switch PCB

Table 13-613

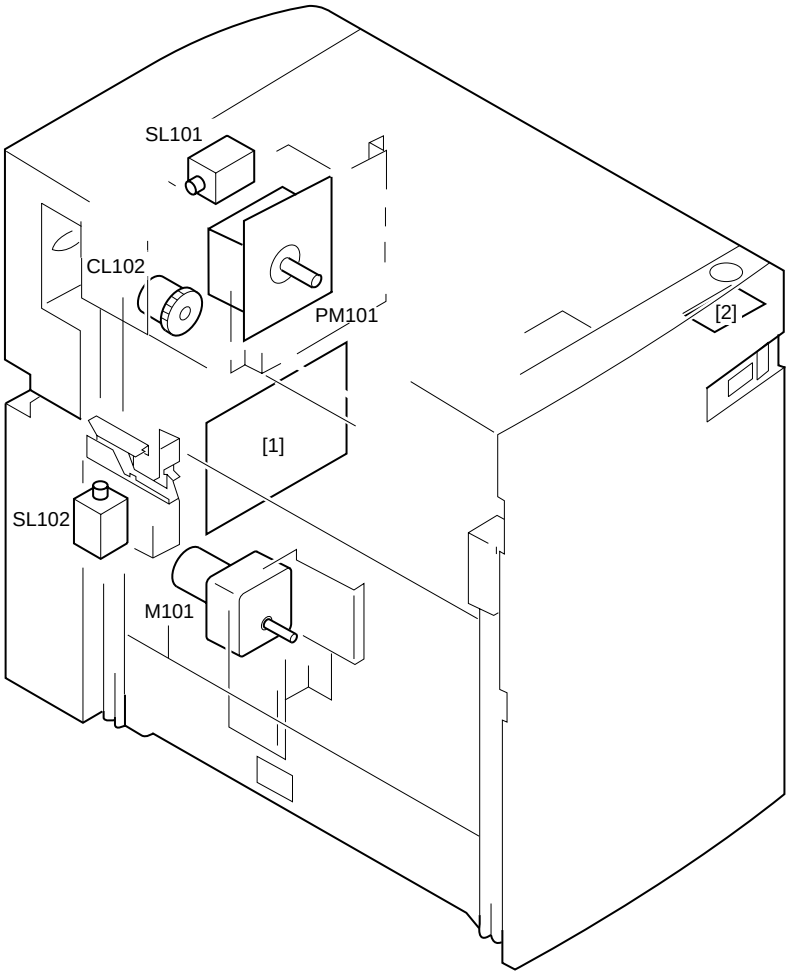

Figure 13-613

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I. Variable Resistors (VR), Light-Emitting Diodes (LED), and Check Pins by PCB

Of the variable resistors (VR), light-emitting diodes (LED), and check pins used in the copier, those that may be used in the field are discussed.

Caution:

1. Some LEDs emit light even when off because of leakage current. It is a normal condition, and must be kept in mind.
2. VRs that may be used in the field: ⊘
   VRs that must not be used it the field: ⊘
3. The VRs and check pins that are not found in the tables are for the factory only, and require special tools and high accuracy. Do NOT touch them in the field.

1. DC Driver PCB

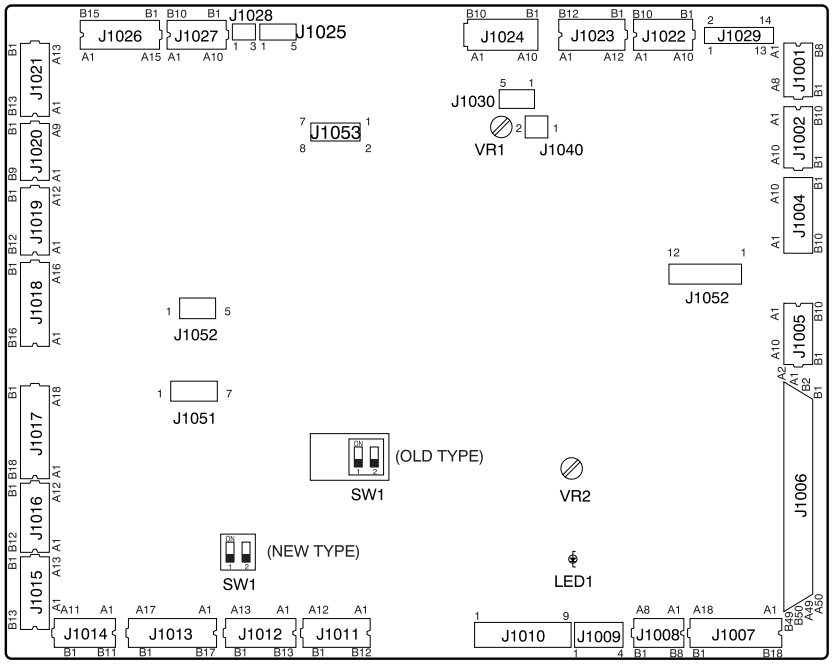

Figure 13-614

LED: turns on when +24 V is supplied, and turns off when the front cover is opened.

SW1-1	SW1-2	OUT	Remarks
OFF	OFF	Normal	Normal area
ON	OFF	Case 1	Highland 1
OFF	ON	Case 2	Highland 2
ON	ON	Not used	

Table 13-614

Caution:

If the copier is used in highlands (low atmospheric pressure), images may suffer from transfer faults. Try changing the setting of the DIP switch (SW1) to highland 1, and see if the problem is corrected; if the problem still occurs, switch SW1 to highland 2.
If the problem still remains thereafter, shift SW1 back to its normal setting, and try to check other possible causes.

2. CPU PCB

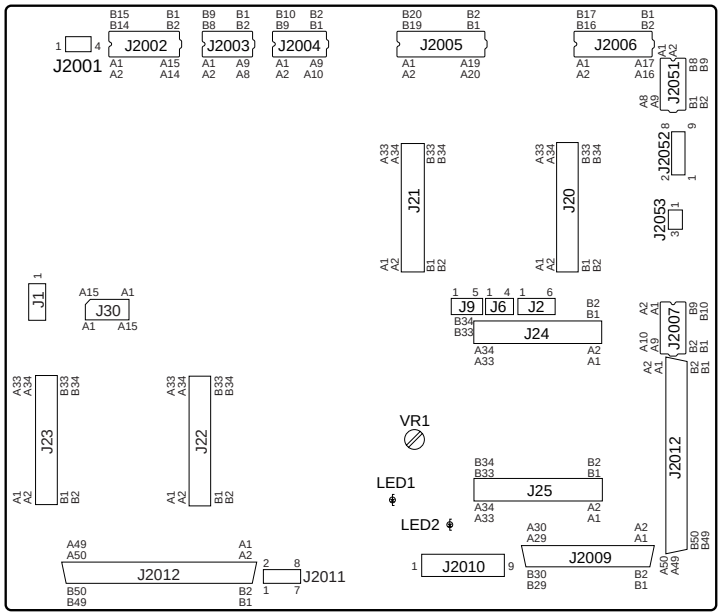

Figure 13-615

LED1: turns on when +5 V is supplied.
LED2: turns on when +24 V is supplied.

3. IP main PCB

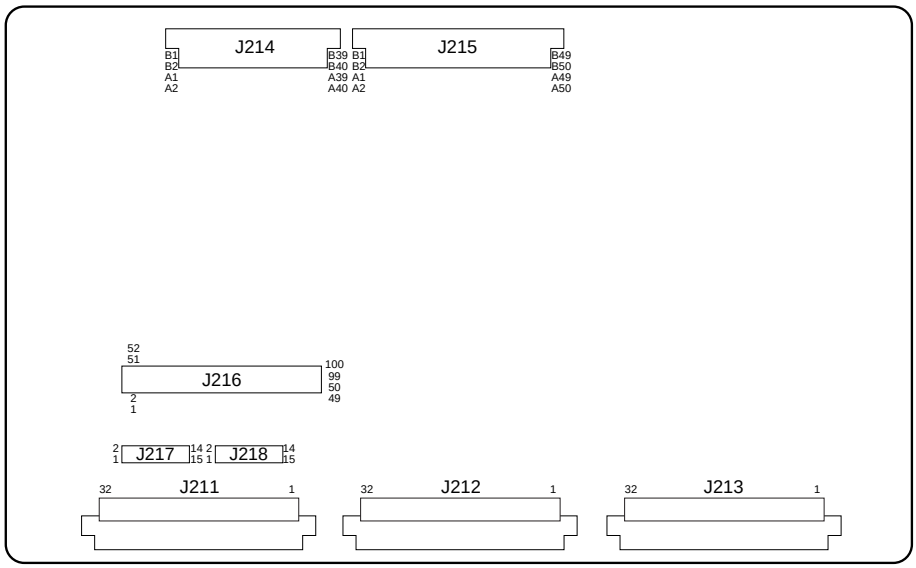

Figure 13-616

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4. Analog Processor PCB

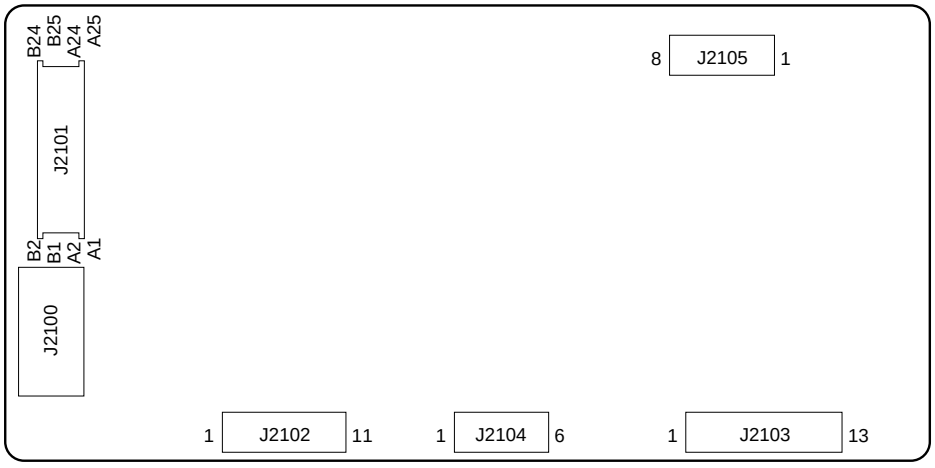

Figure 13-617

5. Laser Driver PCB

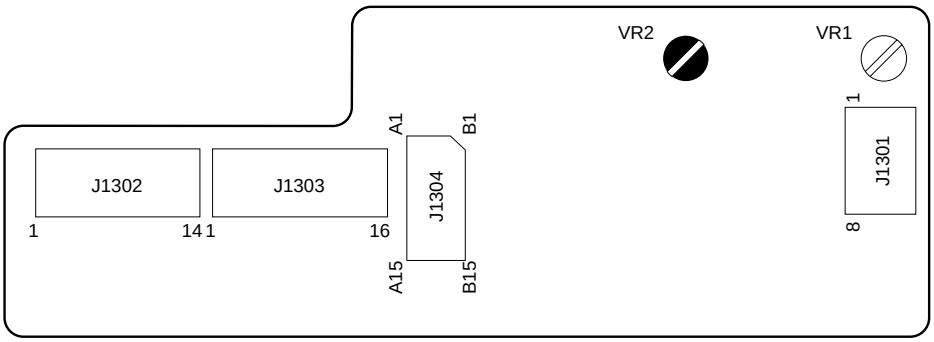

Figure 13-618

VR2: for Pmax adjustment of the laser.

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6. Lamp Regulator PCB

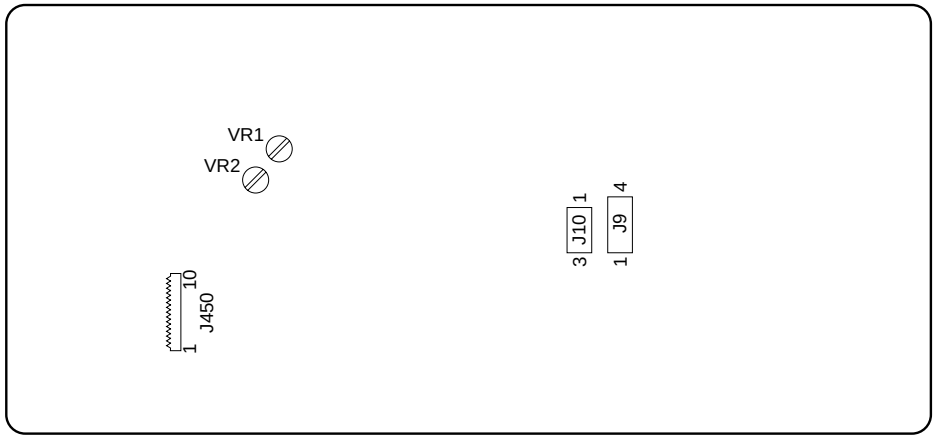

Figure 13-619

7. DC Fuse PCB

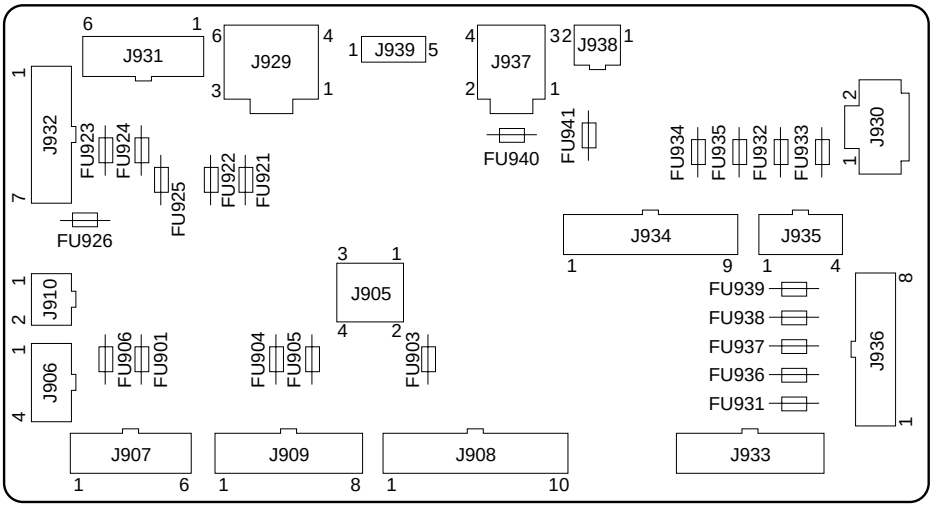

Figure 13-620

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8. AC Fuse PCB

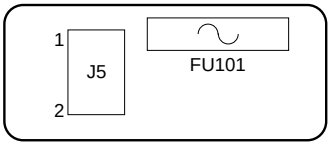

Figure 13-621

9. Developing Bias PCB

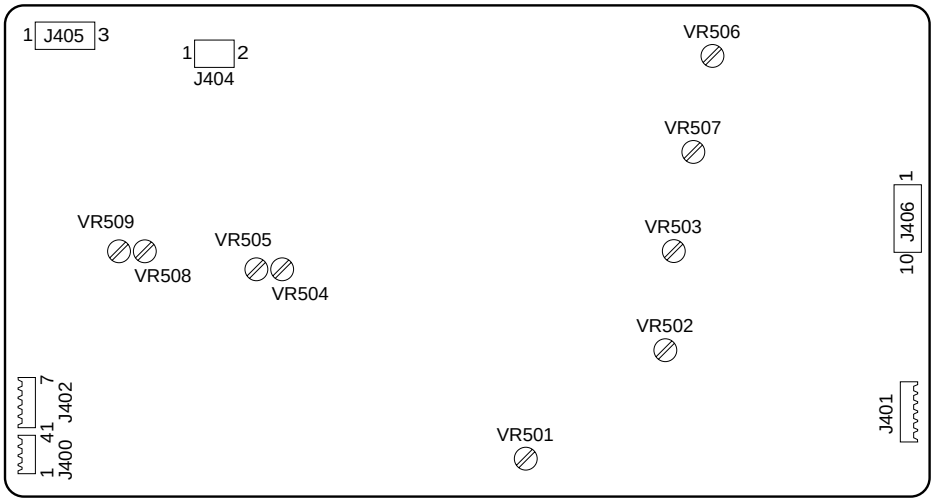

Figure 13-622

10. HVT-AC PCB

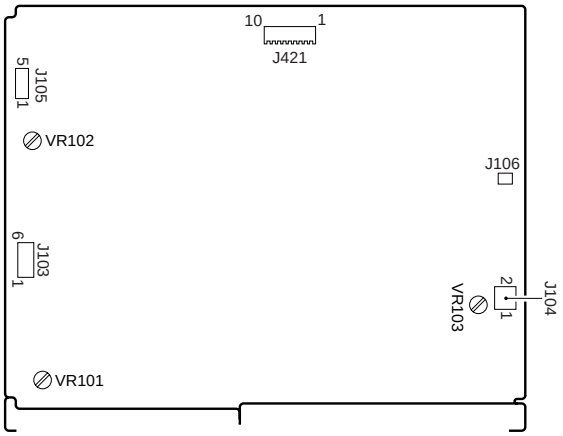

Figure 13-623

11. Potential Measurement PCB

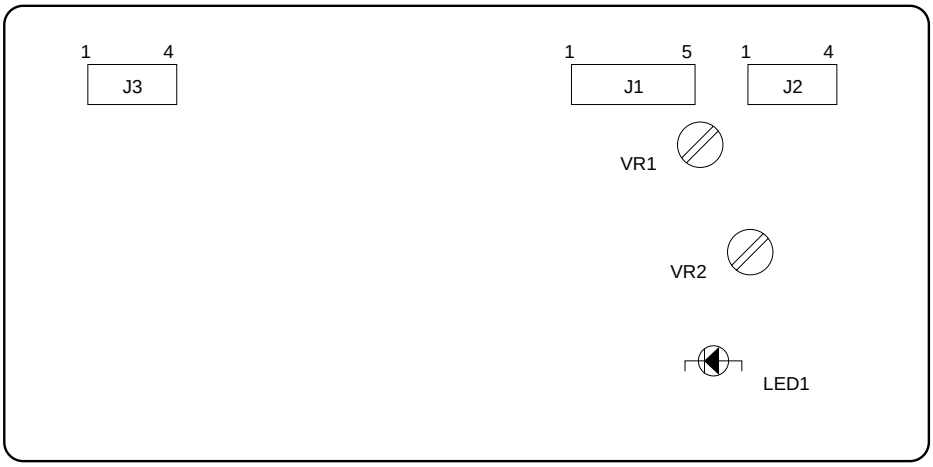

Figure 13-624

LED1: remains on while the surface potential of the drum is being measured.

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VII. SERVICE MODE

A. Outline

The copier's service mode consists of three levels, each using its own screen: Initial screen, Level 1/Level 2 item Screen, and Level 3 item screen.

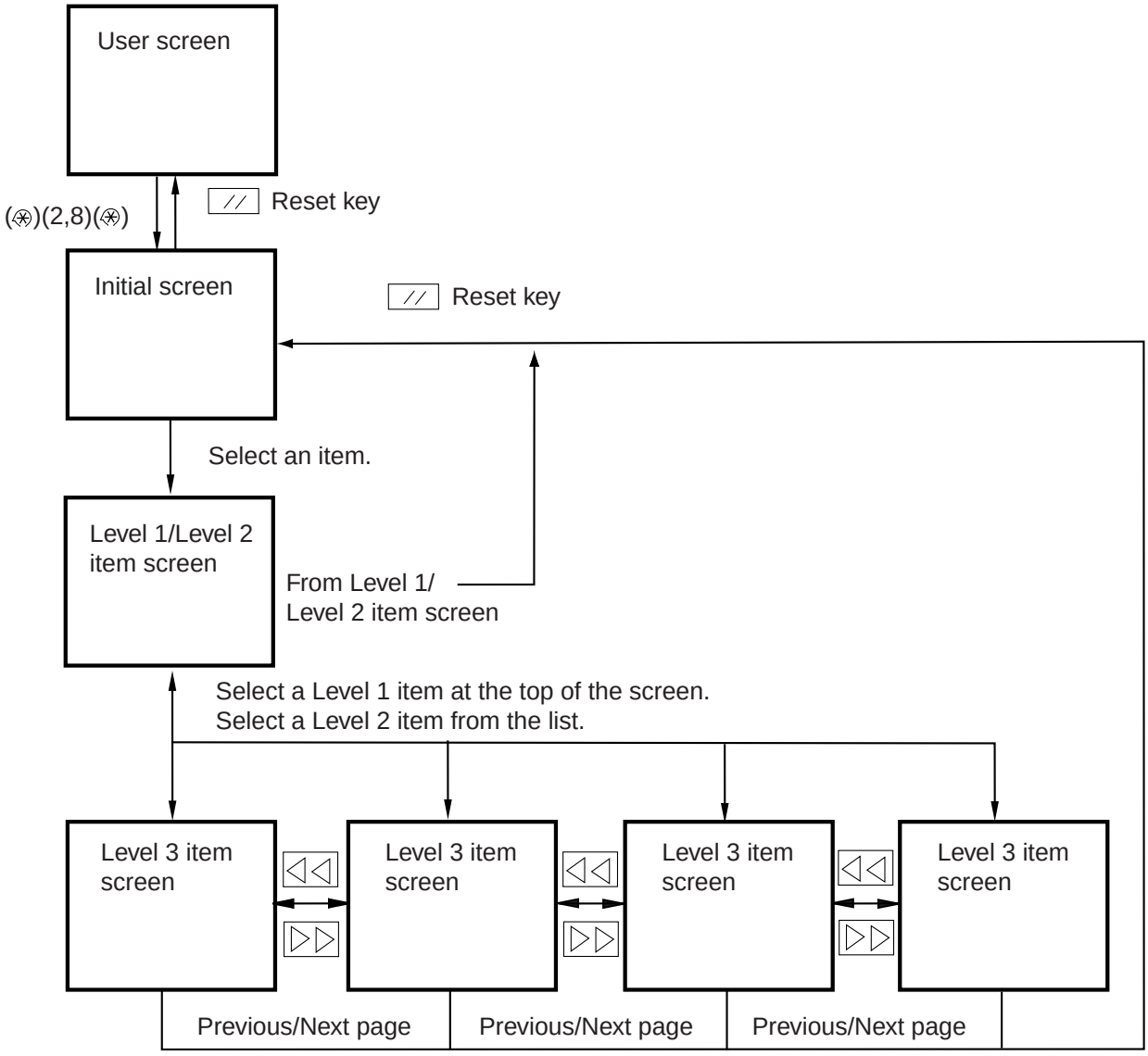

Figure 13-701 Organization of Screens

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The copier's service mode consists of the following seven:

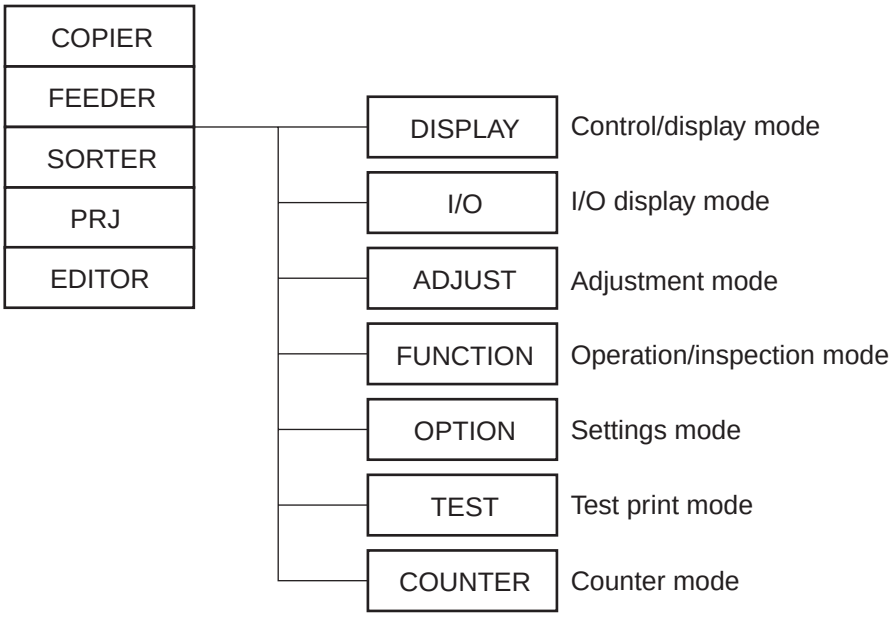

Figure 13-702 Division of Service Mode

1. Starting Service Mode and Making Selections

1) Press the asterisk key ⊛ on the control panel.
2) Press '2' and '8' on the keypad at the same time.
3) Press the asterisk key ⊛ on the control key.

· The above operations will bring up the following Initial screen:

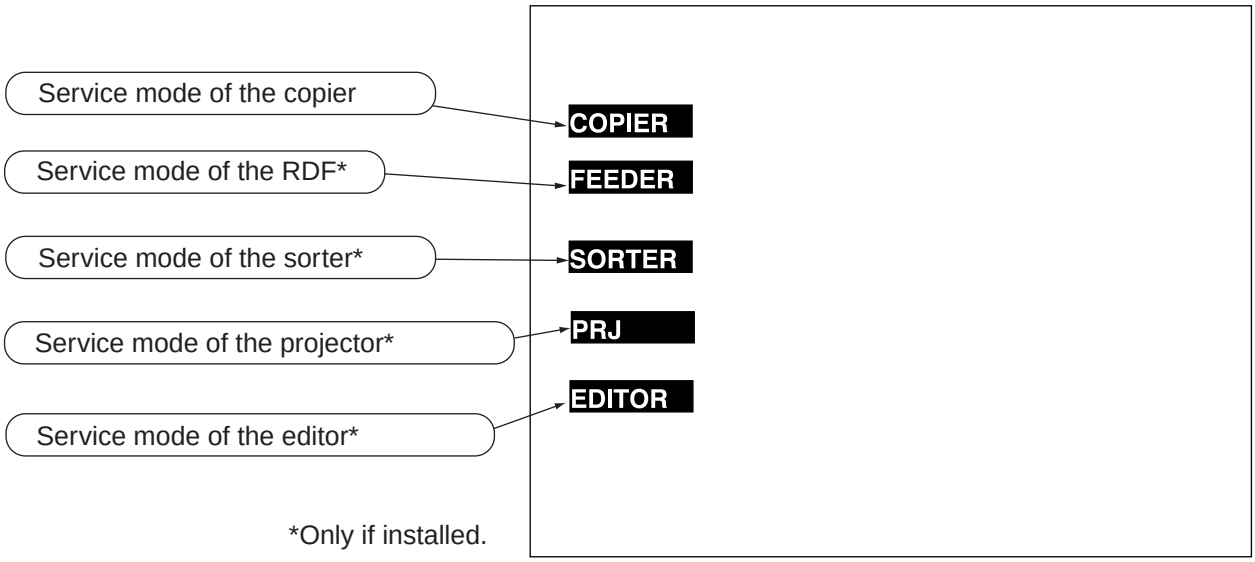

Figure 13-703 Initial Screen

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2. Ending Service Mode

· Press the Reset key once to bring back the service mode Initial screen (Figure 13-703).
· Press the Reset key twice to end service mode and to bring back the User screen (standard screen).

3. Backing Up the RAM

At time of shipment from the factory, each machine is adjusted individually and its adjustment values are recorded on the service label (one of the two labels attached to the service data sheet cover behind the front cover).

If you have replaced the CPU PCB or initialized the RAM, be sure to record all service mode values (ADJUST/OPTION) of the service label. (The values will return to default values upon replacement or initialization.)

If you cannot find an appropriate heading on service label 1, make use of the blanks of service label 2.

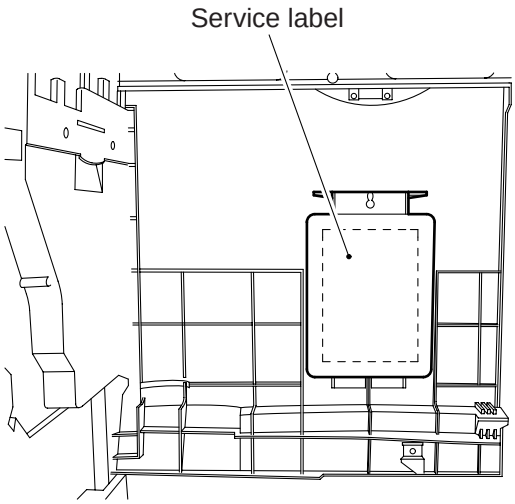

Figure 13-704 Service Label

Back-Up Data Items

Adjust				
ADJ-XY	ADJ-X			
	ADJ-Y			
	ADJ-S			
	ADJ-J			
LASER	T-V00			
	T-VFF			
	P3-V00			
	P3-VFF-1			
	P3-VFF-2			
	P3-VFF-3			
	P3-VFF-4			
DENS	SGNL-Y			
	SGNL-M			
	SGNL-C			
	REF-Y			
	REF-M			
	REF-C			
	SIGG-Y			
	SIGG-M			
	SIGG-C			
	RGAIN-K			
	D-Y-TRGT			
	D-M-TRGT			
	D-C-TRGT			
	PTOFST-Y			
	PTOFST-M			
	PTOFST-C			
	PTOFST-K			
	D-REF-Y			
	D-REF-M			
	D-REF-C			
	D-REF-K			
	D-REF-4			
	D-SGNL-Y			
	D-SGNL-M			
	D-SGNL-C			
	D-SGNL-K			
	D-SGNL-4			

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Adjust				
DENS	P-REF-Y			
	P-REF-M			
	P-REF-C			
	P-REF-K			
	P-SGNL-Y			
	P-SGNL-M			
	P-SGNL-C			
	P-SGNL-K			
	SIGG-K			
	SIGG-P-M			
	SIGG-P-C			
	SIGG-P-Y			
	SIGG-P-K			
	RGAN-P-M			
	RGAN-P-C			
	RGAN-P-Y			
	RGAN-P-K			
V-CONT	VBACK-Y			
	VBACK-M			
	VBACK-C			
	VBACK-K			
	EPOTOFST			
	PF-CRT-Y			
	PF-CRT-M			
	PF-CRT-C			
	PF-CRT-K			
PASCAL	OFST-P-Y			
	OFST-P-M			
	OFST-P-C			
	OFST-P-K			
COLOR	ADJ-Y			
	ADJ-M			
	ADJ-C			
	ADJ-K			
	OFST-Y			
	OFST-M			
	OFST-C			
	OFST-K			
	P-ADJ-Y			

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Adjust				
COLOR	P-ADJ-M			
	P-ADJ-C			
	P-ADJ-K			
	P-OFST-Y			
	P-OFST-M			
	P-OFST-C			
	P-OFST-K			
HV-TR	TR-TR			
	TR-L1			
	HV-L2			
	TR-N1			
	TR-N2			
	TR-T1			
	TR-T2			
	TR-UT1			
	TR-UT2			
	TR-S1-1			
	TR-S2-1			
	TR-OHP			
	TR-POST			
HV-SP	HV-SP			
	SP-L1			
	SP-L2			
	SP-N1			
	SP-N2			
	SP-T1			
	SP-T2			
	SP-UT1			
	SP-UT2			
	SP-S1-1			
	SP-S2-1			
	SP-OHP			
	SP-POST			
	SP-ON-N1			
	SP-ON-N2			
	SP-ON-L1			
	SP-ON-L2			
	SP-ON-T1			
	SP-ON-T2			
	SP-ONUT1			

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Adjust				
HV-SP	SP-ONUT2			
	SP-ON-S1			
	SP-ON-S2			
	SP-ONOHP			
	SP-ON-PT			
HV-IEL	HV-IEL			
	IEL-L1			
	IEL-L2			
	IEL-N1			
	IEL-N2			
	IEL-T1			
	IEL-T2			
	IEL-UT1			
	IEL-UT2			
	IEL-S1-1			
	IEL-S2-1			
	IEL-OHP			
	IEL-POST			
HV-ATT	HV-ATT			
	ATT-L1			
	ATT-L2			
	ATT-N1			
	ATT-N2			
	ATT-T1			
	ATT-T2			
	ATT-S1			
	ATT-S2			
	ATT-OHP			
	ATT-UT1			
	ATT-UT2			
	ATT-POST			
DOC-REC	DA-XS			
	DA-XE			
	DA-YS			
	DA-YE			
	DS-DOC			

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Adjust				
FEED-ADJ	ATT-T-A			
	ATT-T-B			
	RG-XA			
	RG-XB			
	RG-Y			
	TR-DLY-A			
	TR-DLY-B			
	TR-END-A			
	TR-END-B			
CST-ADJ	C2-STMTR			
	C2-A4R			
	C3-STMTR			
	C3-A4R			
	MF-A4R			
	MF-A6R			
	MF-A4			
	C1-LVOL			
	C1-HVOL			
	C2-LVOL			
	C2-HVOL			
	C3-LVOL			
	C3-HVOL			
MISC	SEG-ADJ			
	K-ADJ			
	ATT-RTN1			
	ATT-RTN2			
	ATT-RTN3			
	ATT-RTN4			
	BC-ADJ			
	ACS-ADJ			
SENS-ADJ	CLN-TH			
	CLN-TMP			

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Adjust				
HV-SP-AC	HV-SP			
	SP-L1			
	SP-L2			
	SP-N1			
	SP-N2			
	SP-T1			
	SP-T2			
	SP-UT1			
	SP-UT2			
	SP-S1-1			
	SP-S2-1			
	SP-OHP			
	SP-POST			
HV-PSTCL	HV-PSTCL			
FEEDER	ADJ-RX			
	ADJ-RY			
	ADJ-DX			
	ADJ-DY			
PRJ	DS-PRJ			
	DS-OHP			
	RD-XS			
	RD-XE			
	RD-YS			
	RD-YE			
	DA-XS			
	DA-XE			
	DA-YS			
	DA-YE			
	NEGA-B			
	NEGA-G			
	NEGA-R			
	POSI-B			
	POSI-G			
	POSI-R			
	N-LMT			
	N-G-LMT			
	P-LMT			
	P-G-LMT			

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Adjust				
PRJ	OHP-LMT			
	P-DA-XS			
	P-DA-XE			
	P-DA-YS			
	P-DA-YE			
	N-DA-XS			
	N-DA-XE			
	N-DA-YS			
	N-DA-YE			
	O-DA-XS			
	O-DA-XE			
	O-DA-YS			
	O-DA-YE			
	CHNGR-X			
	CHNGR-Y			
EDITOR	ED-X			
	ED-Y			
	LOOP-MB			
	LOOP-TH			
	MRK-MB			
	MRK-TH			

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Option				
BODY	CCD-DISP			
	CVR-TYPE			
	MODEL-SZ			
	F-WEB			
	PASCAL			
	PSCL-MD			
	EC-GLASS			
	PSTCL-ON			
USER	METAL			
	OHP-MODE			
	COPY-LIM			
	COUNTER1			
	COUNTER2			
	COUNTER3			
	COUNTER4			
	COUNTER5			
	COUNTER6			
	CONTROL			
	PRJ-L-SP			
	BKL-L-SP			
CST	P-SZ-C1			
	P-SZ-C2			
ACC	COIN			
	DK-P			
INT-FACE	REMOTE			
	B-CLR			
	P-PRT-MF			

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4. Basic Operation

a. Initial Screen

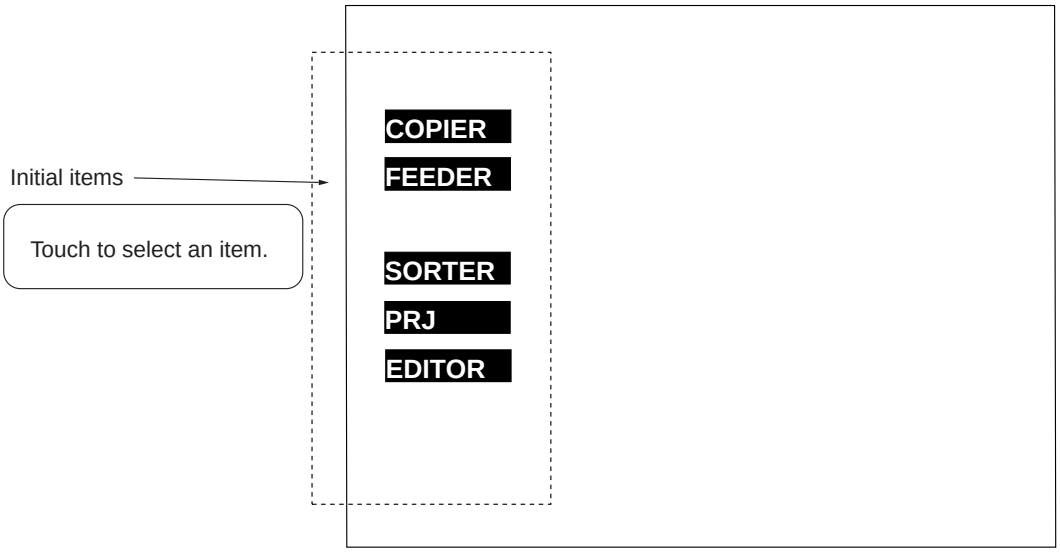

Figure 13-705

b. Level 1/Level 2 Item Screen

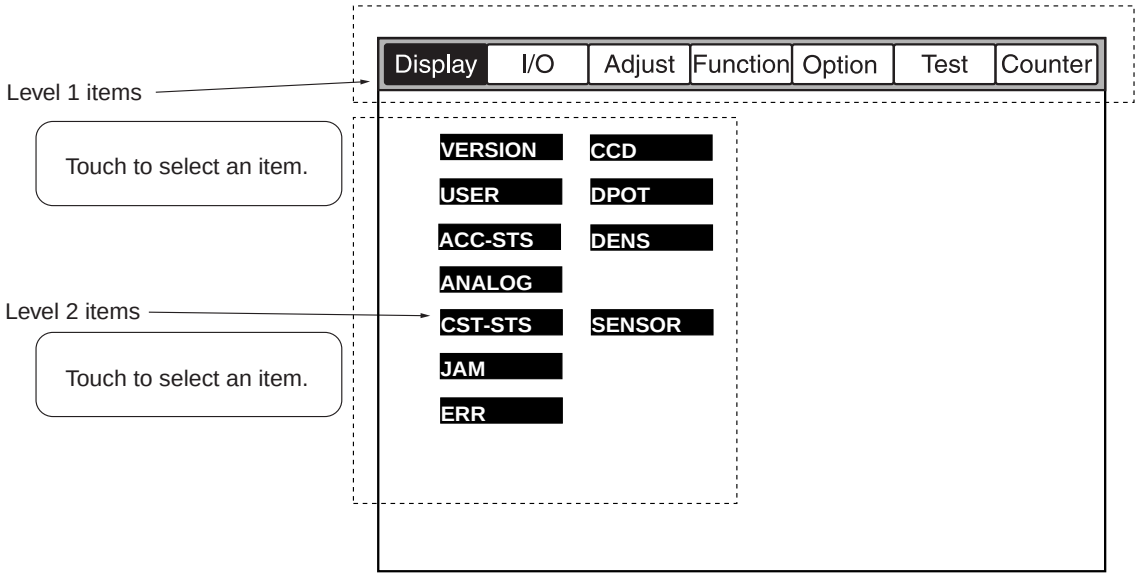

Figure 13-706

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c. Level 3 Item Screen

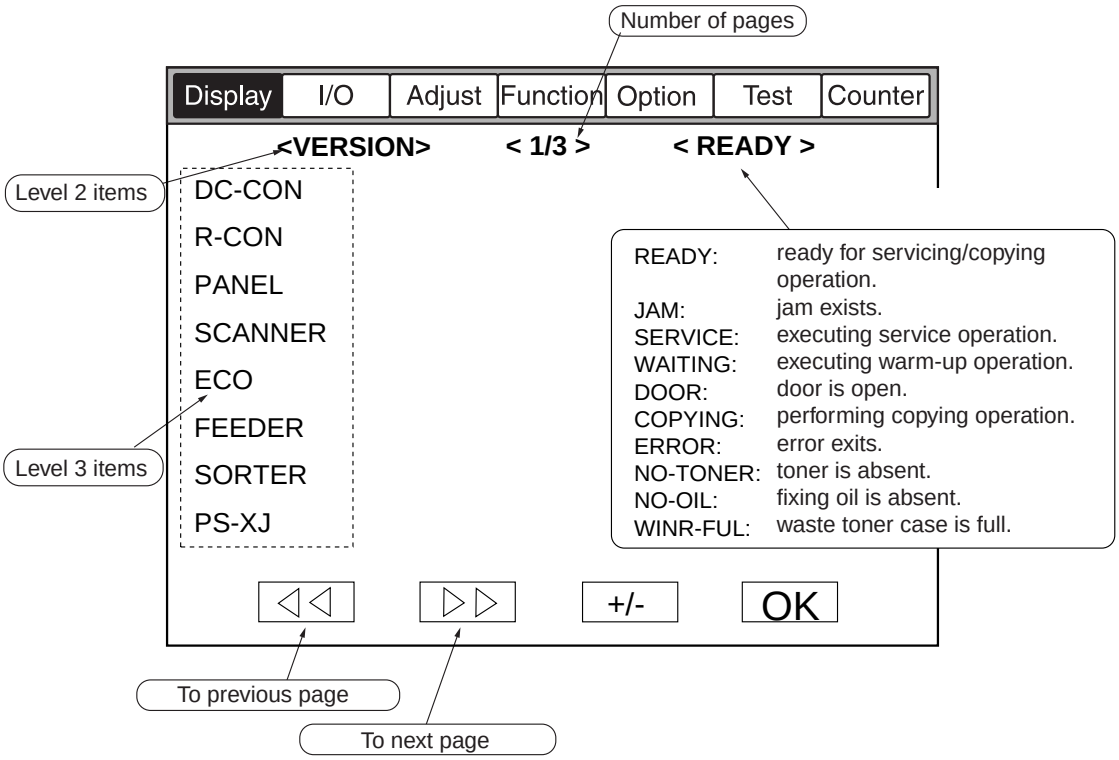

Figure 13-707

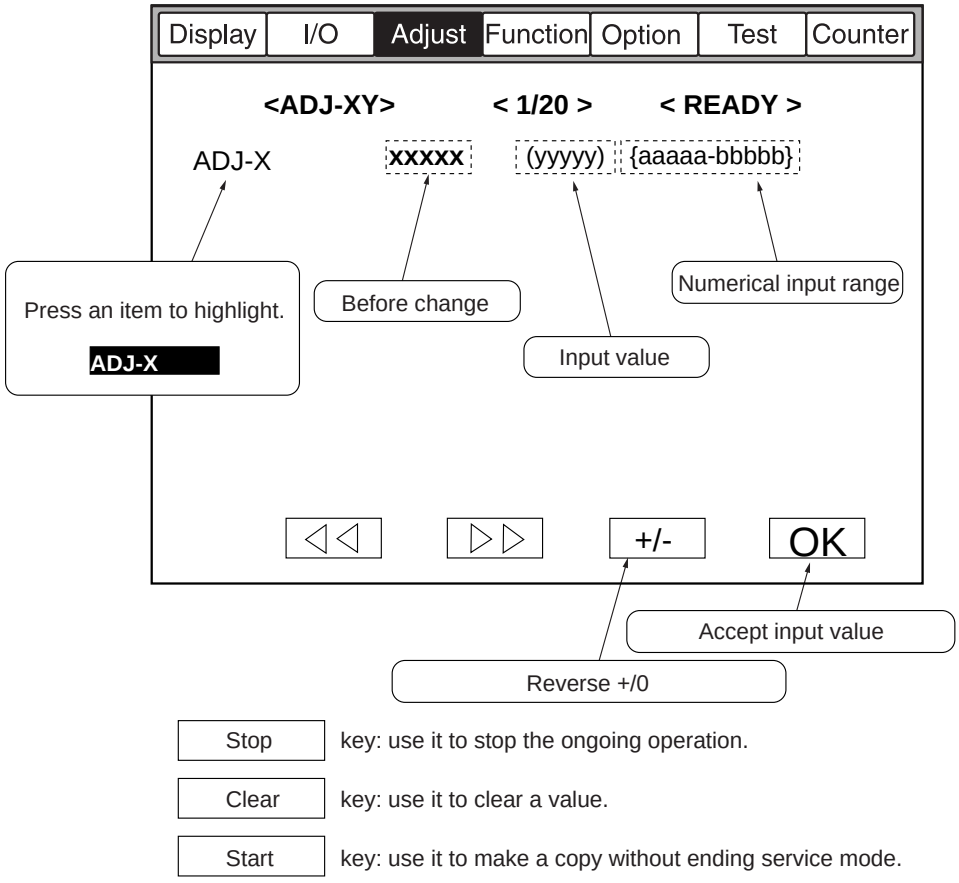

Figure 13-708

B. DISPLAY (control display mode)

The COPIER>DISPLAY screen looks like the following, and it provides the items shown on the next page.

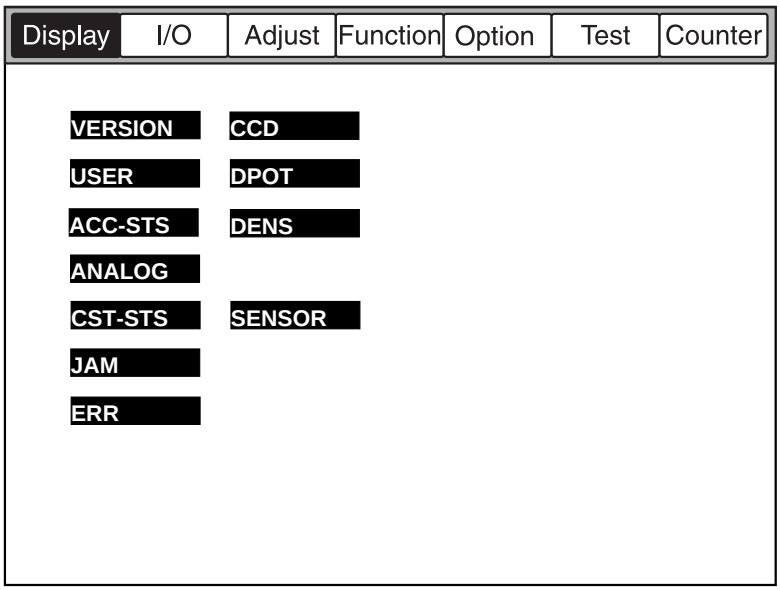

Figure 13-709

The FEEDER>DISPLAY screen looks like the following, and it provides the item shown on the next page.

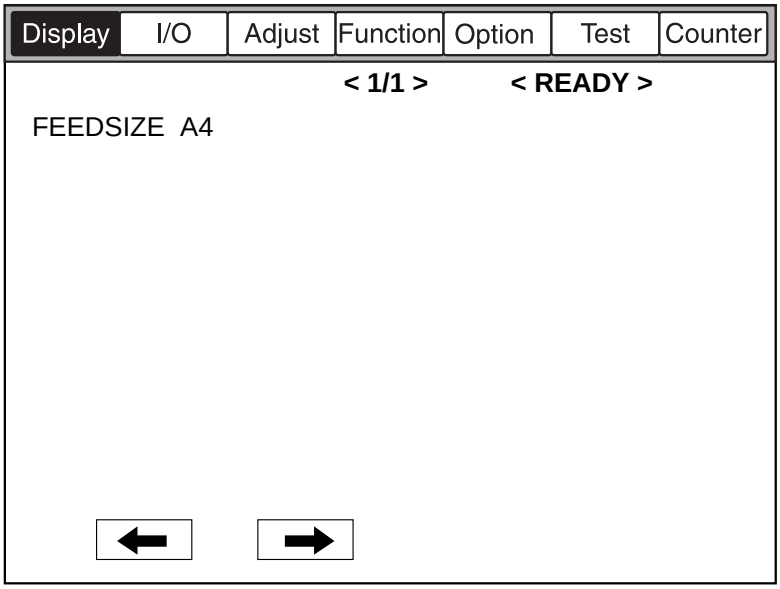

Figure 13-710

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COPIER>DISPLAY Items

Level 1 item	Level 2 item	Level 3 item	Description
DISPLAY	VERSION	DC-CON	ROM version of the DC controller
		R-CON	ROM version of the reader controller
		PANEL	ROM version of the control panel controller
		SCANNER	ROM version of the scanner motor
		ECO	ROM version of the ECO PCB
		FEEDER	ROM version of the feeder controller
		SORTER	ROM version of the sorter controller
		IMG-CNT	ROM version of the external image controller
	USER	LANGUAGE	language used
	ACC-STS	FEEDER	state of connection of the feeder
		SORTER	state of connection of the sorter
		DECK	state of connection of the paper deck
		PRJ	state of connection of the projector
		EDITOR	state of connection of the editor
		PS-XJ	state of connection of the PS-XJ
		CARD	state of insertion of the control card
		DATA-CON	state of connection of the copy data controller
	ANALOG	TEMP	machine internal temperature (environment sensor)
		HUM	machine internal humidity (environment sensor)
		ABS-HUM	machine internal absolute humidity
		FIX-UC	temperature (THM1) of the middle of the fixing upper roller
		FIX-LC	temperature (THM3) of the middle of the fixing lower roller
		FIX-UE	temperature (THM2) of the ends of the fixing upper roller
		FIX-LE	temperature (THM4) of the ends of the fixing lower roller
	CST-STS	WIDTH-C2	paper width of cassette 2
		WIDTH-C3	paper width of cassette 3 (if CLC1150, cassette 2)
		WIDTH-MF	paper width of the multifeeder
	JAM		history of jams
	ERR		history of errors
	CCD	BAR-CODE	bar code value of the standard white PLATE
		TARGET-B	shading target value for BLUE
		TARGET-G	shading target value for GREEN
		TARGET-R	shading target value for RED
		GAIN-U-B	gain increase of BLUE
		GAIN-U-G	gain increase of GREEN
		GAIN-U-R	gain increase of RED
		OFST-OB	offset adjustment value of BLUE-ODD
		OFST-OG	offset adjustment value of GREEN-ODD
		OFST-OR	offset adjustment value of RED-ODD
		OFST-EB	offset adjustment value of BLUE-EVEN
		OFST-EG	offset adjustment value of GREEN-EVEN
		OFST-ER	offset adjustment value of RED-EVEN

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	GAIN-OB	gain adjustment value of LUE-ODD
	GAIN-OG	gain adjustment value of GREEN-ODD
	GAIN-OR	gain adjustment value of RED-ODD
	CCD-TYPE	indicates type (CCD/analog processor)
	METAL	indicates the result of automatic adjustment (normal mode/precious metal mode)
	GAIN-EB	gain adjustment value for BLUE-EVEN
	GAIN-EG	gain adjustment value for GREEN-EVEN
	GAIN-ER	gain adjustment value for RED-EVEN
	BOF-OB	black offset value for BLUE-ODD
	BOFF-OG	black offset value for GREEN-ODD
	BOF-OR	black offset value for RED-ODD
	BOF-EB	black offset value for BLUE-EVEN
	BOF-EG	black offset value for GREEN-EVEN
	BOF-ER	black offset value for RED-EVEN
	LAMP-DAT	data value of activation voltage for the scanning lamp
DPOT	DPOT	surface potential (V) of the photosensitive drum
	V00-Y	setting (V) of Y at laser output 00
	V00-M	setting (V) of M at laser output 00
	V00-C	setting (V) of C at laser output 00
	V00-K	setting (V) of Bk at laser output 00
	VFF-Y	setting (V) of Y at laser output FF
	VFF-M	setting (V) of M at laser output FF
	VFF-C	setting (V) of C at laser output FF
	VFF-K	setting (V) of Bk at laser output FF
	VDC-Y	setting (V) of Y for developing bias DC component
	VDC-M	setting (V) of M for developing bias DC component
	VDC-C	setting (V) of C for developing bias DC component
	VDC-K	setting (V) of Bk for developing bias DC component
	VG-Y	setting (V) of Y for grid bias
	VG-M	setting (V) of M for grid bias
	VG-C	setting (V) of C for grid bias
	VG-K	setting (V) of Bk for grid bias
	VCONT-Y	setting (V) of Y for target contrast potential
	VCONT-M	setting (V) of M for target contrast potential
	VCONT-C	setting (V) of C for target contrast potential
	VCONT-K	setting (V) of Bk for target contrast potential
	VBACK-Y	setting (V) of Y for de-fogging potential
	VBACK-M	setting (V) of M for de-fogging potential
	VBACK-C	setting (V) of C for de-fogging potential
	VBACK-K	setting (V) of for de-fogging potential
	V00-500	setting of drum surface potential at laser V00 while the primary charging assembly is at -500 V
	V00-700	setting of drum surface potential at laser VFF while the primary charging assembly is at -700 V
	VFF-500	setting of drum surface potential at laser V00 while the primary charging assembly is at -500 V
	VFF-700	setting of drum surface potential at laser VFF while the primary charging assembly is at -700 V
	DV00-500	dark area potential attenuation (△V) at laser V00 while the drum surface potential is at 500 V
	DVFF-500	dark area potential attenuation (△V) at laser VFF while the drum surface potential is at 500 V
	DV00-700	dark area potential attenuation (△V) at laser V00 while the drum surface potential is at 700 V

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	DVFF-700	dark area potential attenuation (△V) at laser VFF while the drum surface potential is at 700 V
	PFF-Y	setting of laser pulse width for Y
	PFF-M	setting of laser pulse width for M
	PFF-C	setting of laser pulse width for C
	PFF-K	setting of laser pulse width for Bk
DENS	DENS-Y	result of computation of the developer concentration inside the Y developing assembly
	DENS-M	result of computation of the developer concentration inside the M developing assembly
	DENS-C	result of computation of the developer concentration inside the C developing assembly
	DENS-K	result of computation of the developer concentration inside the Bk developing assembly
	WINDOW-Y	window soiling coefficient of Y
	WINDOW-M	window soiling coefficient of M
	WINDOW-C	window soiling coefficient of C
	WINDOW-K	window soiling coefficient of Bk
	DMAX-Y	solid density of Y at time of auto gradation correction
	DMAX-M	solid density of M at time of auto gradation correction
	DMAX-C	solid density of C at time of auto gradation correction
	DMAX-K	solid density of Bk at time of auto gradation correction
	VRATE-Y	control value for Y used to determine contrast potential
	VRATE-M	control value for M used to determine contrast potential
	VRATE-C	control value for C used to determine contrast potential
	VRATE-K	control value for Bk used to determine contrast potential
	PTOFST-Y	offset value of laser strength for Y patch image density correction
	PTOFST-M	offset value of laser strength for M patch image density correction
	PTOFST-C	offset value of laser strength for C patch image density correction
	PTOFST-K	offset value of laser strength for Bk patch image density correction
	D-Y-TRGT	target value for Y developer concentration
	D-M-TRGT	target value for M developer concentration
	D-C-TRGT	target value for C developer concentration
	REF-Y	measurement of the concentration reference signal inside the Y developing assembly (present value; direct light from LED)
	REF-M	measurement of the concentration reference signal inside the M developing assembly (present value; direct light from LED)
	REF-C	measurement of the concentration reference signal inside the C developing assembly (present value; direct light from LED)
	SGNL-Y	measurement of the present Y developer concentration (present value)

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	SGNL-M	measurement of the present M developer concentration (present value)
	SGNL-C	measurement of the present C developer concentration (present value)
	PT-REF-Y	concentration reference signal for Y toner on the photosensitive drum
	PT-REF-M	concentration reference signal for M toner on the photosensitive drum
	PT-REF-C	concentration reference signal for C toner on the photosensitive drum
	PT-REF-K	concentration reference signal for Bk toner on the photosensitive drum
	PT-SIG-Y	concentration signal of Y toner on the photosensitive drum (present value)
	PT-SIG-M	concentration signal of M toner on the photosensitive drum (present value)
	PT-SIG-C	concentration signal of C toner on the photosensitive drum (present value)
	PT-SIG-K	concentration signal of Bk toner on the photosensitive drum (present value)
	PT-SIG-D	reflection intensity signal of the photosensitive drum surface (present value)
	PT-REF-D	reflection intensity reference signal of the photosensitive drum surface
	DMAX70-Y	solid concentration of Y at laser pulse width 70% during auto gradation correction
	DMAX70-M	solid concentration of M at laser pulse width 70% during auto gradation correction
	DMAX70-C	solid concentration of C at laser pulse width 70% during auto gradation correction
	DMAX70-K	solid concentration of Bk at laser pulse width 70% during auto gradation correction
SENSOR	SC-HP	output of the original scanner HP sensor (PS1)
	ITOP-A	output of the side A sensor (PS2)
	ITOP-B	output of the side B sensor (PS3)
	WEB	fixing cleaning belt is absent
	W-TONER	waste toner case is full

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PRJ>DISPLAY Items

Level 1 item	Level 2 item	Level 3 item	Description
DISPLAY		CHANGER	auto changer (0: absent, 1: present)
		TRAY	slide tray (0: absent, 1: present)
		T-KIND	tray type (0: 80, 1: 40)
		T-SET	slide (0: absent, 1: present)
		T-MOVE	tray (0: stationary, 1: moving)
		T-M-ERR	tray movement error (0: normal, 1: error)
		T-HP-ERR	tray HP error (0: normal, 1: error)
		T-L-MOVE	tray local movement (0: stationary, 1: moving)
		T-POS	tray position (0: HP, 1: not HP)
		L-MOVE	lens movement (0: stationary, 1: moving)
		M-EXCT	motor excitation (0: normal, 1: excited)
		L-POS	lens position (0: HP, 1: not HP)
		LAMP-ERR	lamp open circuit detection (0: normal, 1: short circuit)
		INITIAL	initialization (0: normal, 1: initializing)
		LOCAL	local operation (0: normal, 1: operating)
		R/L	0: remote, 1: local

EDITOR>DISPLAY Items

Level 1 item	Level 2 item	Level 3 item	Description
DISPLAY		ED-X	input coordinates in editor sub scanning (X) direction
		ED-Y	input coordinates in editor main scanning (Y) direction

VERSION

Indicates the ROM version of the PCBs of the copier and its accessories.

Level 3	Description	Remarks
DC-CON	Indicates the version of the flash memory of the DC-CPU.	Display <XX. YY> R&D number Version number
R-CON	Indicates the version of the flash memory on the R-CPU.	
PANEL	Indicates the version of the flash memory on the PANEL-CPU.	
SCANNER	Indicates the version of the CPU (IC8) on the original scanner motor driver PCB.	
ECO	Indicates the version of the ROM (IC2) on the ECO PCB.	
FEEDER	Indicates the version of the ROM on the feeder controller.	
SORTER	Indicates the version of the ROM on the sorter controller.	
IMG-CNT	Indicates the version of the ROM on the external image controller.	

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USER COPIER>DISPLAY

Indicates items related to the User screen and the user.

Level 1	Description	Remarks
LANGUAGE	Indicates the language used/paper size configuration. xx (first 2 digits): country code yy (last 2 digits): language code zz: destination code (00: CANON, 01: OEM) aa: paper size configuration code Code / Configuration 00 AB 01 Inch 02 A 03 All sizes	

ACC-STS

Indicates the state of connection of accessories.

Level 3	Description	Remarks
FEEDER	Indicates the sate of connection of the feeder.	
SORTER	Indicates the state of connection of the sorter.	
DECK	Indicates the state of connection of the paper deck.	
PRJ	Indicates the state of connection of the projector.	
EDITOR	Indicates the state of connection of the editor.	
PS-XJ	Indicates the state of connection of the PS-XJ.	
CARD	Indicates the state of insertion of a control card.	
DATA-CON	Indicates the state of connection of the copy data controller.	

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ANALOG

COPIER>DISPLAY

Indicates the measurements taken by the analog sensor.

Level 1	Description	Remarks
TEMP	Indicates the machine internal temperature (environment sensor).	Unit: °C
HUM	Indicates the machine internal humidity (movement sensor).	Unit: %RH
ABS-HUM	Indicates the machine internal absolute humidity.	Unit: g
FIX-UC	Indicates the temperature (THM1) of the middle of the fixing upper roller.	Unit: °C
FIX-LC	Indicates the temperature (THM3) of the middle of the fixing lower roller.	Unit: °C
FIX-UE	Indicates the temperature (THM2) of the ends of the fixing upper roller.	Unit: °C
FIX-LE	Indicates the temperature (THM4) of the ends of the fixing lower roller.	Unit: °C

CST-STS

Indicates the paper size of the cassette/multifeeder.

Level 1	Description	Remarks
WIDTH-C2	Indicates the paper switch of the cassette 2.	Unit: mm (decimal places are omitted)
WIDTH-C3	Indicates the paper width of the cassette 3 (for CLC1150, cassette 2).	
WIDTH-MF	Indicates the paper width of the multifeeder.	

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JAM

COPIER>DISPLAY

Indicates jam data.

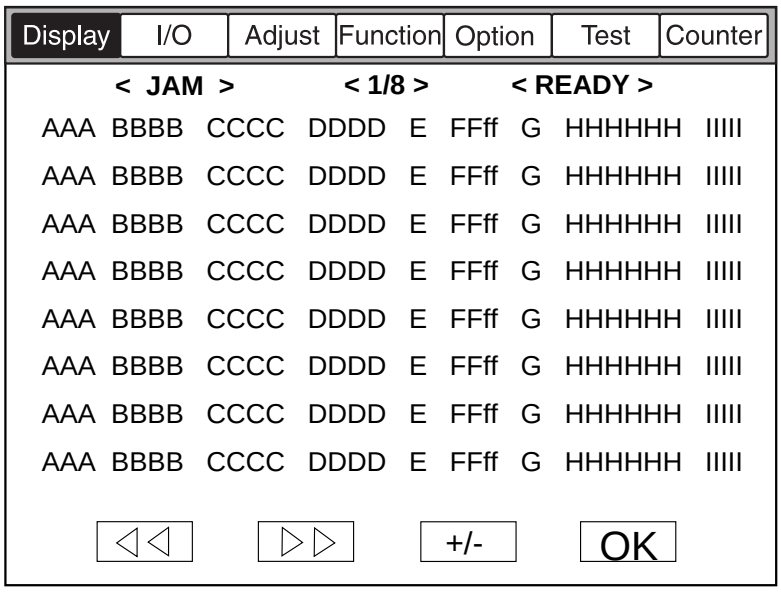
Display
I/O
Adjust
Function
Option
Test
Counter
< JAM >
< 1/8 >
< READY >
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
+/-
OK

Figure 13-711

Item	Description	Remarks
AAA	Indicates the order of jams (higher the number, older the jam).	1 to 64 (64 jams max.)
BBBB	----	
CCCC	----	
DDDD	----	
E	Indicates the location of the jam.	0: copier 1: feeder 2: sorter
FFff	Jam code	FF: type of jam (Table 13-701) ff: sensor (Table 13-702)
G	Indicates the source of paper.	See Table 13-703.
HHHHHH	Indicates the soft counter for the source of paper.	
IIIII	Indicates the size of paper.	

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FF: Type of Jam

COPIER>DISPLAY

Code	Type	Code	Type
01xx	delay	05xx	sorter
02xx	stationary	EExx	service call
03xx	remaining	FFxx	door open
04xx	service mode		

Table 13-701

ff: Jam Sensor

	Jam sensor	Code	Jam sensor
xx01*	pickup vertical path sensor (PS27)	xx50	post-transfer paper sensor (PS6)
xx02*	pickup vertical path sensor (PS26)	xx51	pre-transfer paper sensor (PS5)
xx03*	pickup vertical path sensor 1 (PS21)	xx52	pre-cleaning paper sensor (PS71)
xx04*	re-pickup vertical path sensor (PS28)	xx60	separation sensor (PS7)
xx05	deck pickup sensor (PS101)	xx61	internal delivery paper sensor (PS12)
xx06	multifeeder pickup sensor (PS9)	xx70	external delivery sensor (PS31)
xx09	pickup vertical path sensor (PS27)	xx80	delivery vertical path sensor 1 (PS32)
xx10	pickup vertical path sensor 2 (PS26)	xx81	delivery vertical path sensor 1 (PS33)
xx11	pickup vertical path sensor 1 (PS21)	xx82	duplexing inlet paper sensor (PS37)
xx12	re-pickup vertical path sensor (PS28)	xx83	duplexing path paper sensor (PS34)
xx20	transparency sensor (PS69)	xx84	duplexing path reversal paper sensor (PS35)
xx30	pre-registration sensor (PS30)		
xx40	registration sensor(PS70)	xx90	buffer path unit sensor assembly

* Detection at time of pickup.

Table 13-702a

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ff: Detail of Sorter Jam

COPIER>DISPLAY

Code	Type	Code	Type of jam
xx03	feeding delay	xx08	door open jam (paper present)
xx04	feeding stationary	xx09	door open jam (paper absent)
xx06	staple jam	xx0A	bin outside jam
xx07	power-on jam		

Table 13-702b

G: Source of Paper

Code	Description	Code	Description
1	cassette 1	6	not used
2	cassette 2	7	paper deck
3	cassette 3	8	multifeeder
4	not used	9	duplexing unit
5	not used		

Table 13-703

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ERR

COPIER>DISPLAY

Indicates error codes.

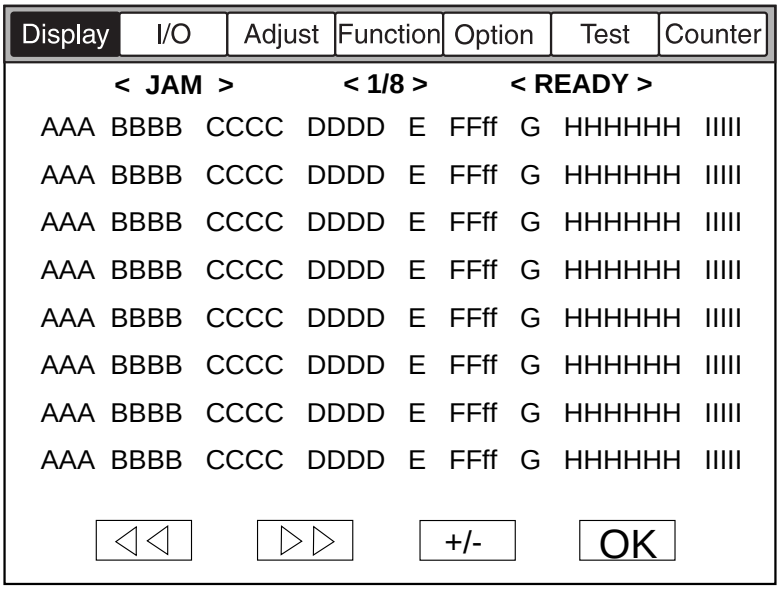
Display
I/O
Adjust
Function
Option
Test
Counter
< JAM >
< 1/8 >
< READY >
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
AAA BBBB CCCC DDDD E FFff G HHHHHH IIIII
+/-
OK

Figure 13-712

Level 3	Description	Remarks
AAA	Indicates the order of errors (the higher the number, the older the error).	1 to 32 (32 max.)
BBBB	----	
CCCC	----	
DDDD	----	
EEEE	Indicates the error code.	See "Self Diagnosis."
FFff	Indicates the detail code.	If none, '0000'.
G	Indicates the location of the error.	0: copier 1: feeder 2: sorter

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CCD COPIER>DISPLAY

Indicates the measurements related to the CCD.

Level 3	Description	Remarks
BAR-CODE	bar code value of the standard white plate	Indicated only when FUNCTION>CCD>AUTO-ADJ has been executed.
TARGET-B	shading target value of BLUE	
TARGET-G	shading target value of GREEN	
TARGET-R	shading target value of RED	
GAIN-U-B	gain increase value of BLUE	
GAIN-U-G	gain increase value of GREEN	
GAIN-U-R	gain increase value of RED	
OFST-OB	offset adjustment value of BLUE-OD	
OFST-OG	offset adjustment value of GREEN-ODD	
OFST-OR	offset adjustment value of RED-ODD	
OFST-EB	offset adjustment value of BLUE-EVEN	
OFST-EG	offset adjustment value of GREEN-EVEN	
OFST-ER	offset adjustment value of RED-EVEN	
GAIN-OB	gain adjustment value of BLUE-ODD	
GAIN-OG	gain adjustment value of GREEN-ODD	
GAIN-OR	gain adjustment value of RED-ODD	
CCD-TYPE	type (CCD/analog processor)	(3: CLC1100 only)
METAL	result of automatic adjustment (normal mode/ precious metal mode)	0: normal mode 1: precious metal mode
GAIN-EB	gain adjustment value of BLUE-EVEN	
GAIN-EG	gain adjustment value of GREEN-EVEN	
GAIN-ER	gain adjustment value of RED-EVEN	
BOF-OB	black offset value of BLUE-ODD	
BOF-OG	black offset value of GREEN-ODD	
BOF-OR	black offset value of RED-ODD	
BOF-EB	black offset value of BLUE-EVEN	
BOF-EG	black offset value of GREEN-EVEN	
BOF-ER	black offset value of RED-EVEN	
LAMP-DAT	original scanning lamp activation voltage for CVR	0 to 999

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DPOT COPIER>DISPLAY

Indicates the control data for the surface potential of the photosensitive drum.

Level 3	Description	Remarks
DPOT	surface potential (V) of the photosensitive drum	Indicated in round numbers, omitting decimal places.
V00-Y	setting (V) of Y at laser output 00	
V00-M	setting (V) of M at laser output 00	
V00-C	setting (V) of C at laser output 00	
V00-K	setting (V) of Bk at laser output FF	
VFF-Y	setting (V) of Y at laser output FF	
VFF-M	setting (V) of M at laser output FF	
VFF-C	setting (V) of C at laser output FF	
VFF-K	setting (V) of Bk at laser output FF	
VDC-Y	setting (V) of Y for developing bias DC component	
VDC-M	setting (V) of M for developing bias DC component	
VDC-C	setting (V) of C for developing bias DC component	
VDC-K	setting (V) of Bk for developing bias DC component	
VG-Y	setting (V) of Y for grid bias	
VG-M	setting (V) of M for grid bias	
VG-C	setting (V) of C for grid bias	
VG-K	setting (V) of Bk for grid bias	

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COPIER>DISPLAY

Level 3	Description	Remarks
VCONT-Y	setting (V) of Y for target contrast potential	Indicated in round numbers, omitting decimal places.
VCONT-M	setting (V) of M for target contrast potential	
VCONT-C	setting (V) of C for target contrast potential	
VCONT-K	setting (V) of Bk for target contrast potential	
VBACK-Y	setting (V) of de-fogging potential for Y	
VBACK-M	setting (V) of de-fogging potential for M	
VBACK-C	setting (V) of de-fogging potential for C	
VBACK-K	setting (V) of de-fogging potential for Bk	
V00-500	measurement of drum surface potential at laser V00 with the primary charging assembly at -500 V	
V00-700	measurement of drum surface potential at laser V00 with the primary charging assembly at -700 V	
VFF-500	measurement of drum surface potential at laser VFF with the primary charging assembly at -500 V	
VFF-700	measurement of drum surface potential at laser VFF with the primary charging assembly at -700 V	
DV00-500	dark area potential attenuation (△V) at laser V00 with the drum surface potential at 500 V	
DVFF-500	dark area potential attenuation (△V) at laser VFF with the drum surfaced potential at 500 V	
DV00-700	dark area potential attenuation (△V) at laser V00 with the drum surfaced potential at 700 V	
DVFF-700	dark area potential attenuation (△V) at laser VFF with the drum surfaced potential at 700 V	
PFF-Y	setting of laser pulse width for Y	
PFF-M	setting of laser pulse width for M	
PFF-C	setting of laser pulse width for C	
PFF-K	setting of laser pulse width for Bk	

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DENS

COPIER>DISPLAY

Indicates the concentration of developer.

Level 3	Description	Remarks
DENS-Y	computed value (%) of the developer inside the Y developing assembly	Indicates to the second decimal place.
DENS-M	computed value (%) of the developer inside the M developing assembly	
DENS-C	computed value (%) of the developer inside the C developing assembly	
DENS-K	computed value (%) of the developer inside the Bk developing assembly	
WINDOW-Y	window soiling correction coefficient for Y	Error if lower than 70%
WINDOW-M	window soiling correction coefficient for M	
WINDOW-C	window soiling correction coefficient for C	
WINDOW-K	window soiling correction coefficient for Bk	
DMAX-Y	solid density (%) of Y during auto gradation correction	Compares against the design value, and omits decimal places.
DMAX-M	solid density (%) of M during auto gradation correction	
DMAX-C	solid density (%) of C during auto gradation correction	
DMAX-K	solid density (%) of Bk during auto gradation correction	
VRATE-Y	control value of Y used to determine contrast potential	Uses whole numbers, omitting decimal places
VRATE-M	control value of M used to determine contrast potential	
VRATE-C	control value of C used to determine contrast potential	
VRATE-K	control value of Bk used to determine contrast potential	
PTOFST-Y	offset value of laser strength for Y patch image density adjustment	
PTOFST-M	offset value of laser strength for M patch image density adjustment	
PTOFST-C	offset value of laser strength for C patch image density adjustment	
PTOFST-K	offset value of laser strength for Bk patch image density adjustment	

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COPIER>DISPLAY

Level 3	Description	Remarks
D-Y-TRGT	target value of Y developer concentration	Indicated in round numbers, omitting decimal places
D-M-TRGT	target value of M developer concentration	
D-C-TRGT	target value of C developer concentration	
REF-Y	present value of the density reference signal for the Y developing assembly (direct light form (LED)	
REF-M	present value of the density reference signal for the M developing assembly (direct light form (LED)	
REF-C	present value of the density reference signal for the C developing assembly (direct light from LED)	
SGNL-Y	measurement of the present Y developer concentration	
SGNL-M	measurement of the present M developer concentration	
SGNL-C	measurement of the present C developer concentration	
PT-REF-Y	concentration reference signal for the Y toner on the photosensitive drum	
PT-REF-M	concentration reference signal for the M toner on the photosensitive drum	
PT-REF-C	concentration reference signal for the C toner on the photosensitive drum	
PT-REF-K	concentration reference signal for the Bk toner on the photosensitive drum	
PT-SIG-Y	concentration signal for the Y toner on the photosensitive drum (present value)	
PT-SIG-M	concentration signal for the M toner on the photosensitive drum (present value)	
PT-SIG-C	concentration signal for the C toner on the photosensitive drum (present value)	
PT-SIG-K	concentration signal for the Bk toner on the photosensitive drum (present value)	
PT-SIG-D	reflection intensity signal for the photosensitive drum surface (present value)	
PT-REF-D	reflection intensity reference signal for the photosensitive drum surface	
DMAX70-Y	solid density of Y at laser pulse width 70% during auto gradation correction	Indicated in round numbers, omitting decimal places.
DMAX70-M	solid density of M at laser pulse width 70% during auto gradation correction	
DMAX70-C	solid density of C at laser pulse width 70% during auto gradation correction	
DMAX70-K	solid density of Bk at laser pulse width 70% during auto gradation correction	

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SENSOR COPIER>DISPLAY

Indicates the state of sensors of particular importance for servicing work.

Level 3	Description	Remarks
SC-HP	output of the original scanner HP sensor (PS1)	0: HP 1: not HP
ITOP-A	output of the side A sensor (PS2)	0: sensor not detecting signal plate 1: sensor detecting signal plate
ITOP-B	output of side B sensor (PS3)	
WEB	cleaning belt is out	0: present 1: absent
W-TONER	case full	0: case not full 1: case is full

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Projector — PRJ>DISPLAY

Level 3	Description	Remarks
CHANGER	presence/absence of the auto changer	0: absent, 1: present
TRAY	presence/absence of the slide tray	0: absent, 1: present
T-KIND	type of tray	0: 80, 1: 140
T-SET	presence/absence of slides	0: absent, 1: present
T-MOVE	state of the tray	0: stationary, 1: moving
T-M-ERR	tray movement error	0: normal, 1: error
T-HP-ERR	tray HP error	0: normal, 1: error
T-L-MOVE	tray local movement	0: stationary, 1: moving
T-POS	position of the tray	0: HP, 1: not HP
L-MOVE	lens movement	1: stationary, 1: moving
M-EXCT	state of motor excitation	0: normal, 1: excited
L-POS	position of the lens	0: HP, 1: not HP
LAMP-ERR	open circuit in the lamp	0: normal, 1: open circuit
INITIAL	initialization	0: normal, 1: being initialized
LOCAL	local movement	0: normal, 1: moving
R/L	remote/local	0: remote, 1: local

Editor — EDITOR>DISPLAY

Level 3	Description	Remarks
ED-X	input coordinates in editor sub scanning direction (X)	Not indicated if EDITOR>OPTION> ED-MODE is set to '0'.
ED-Y	input coordinates in editor main scanning direction (Y)	

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C. I/O (I/O display mode)

The Level 2 screen of I/O mode looks like the following, and it provides the items shown on the next page.

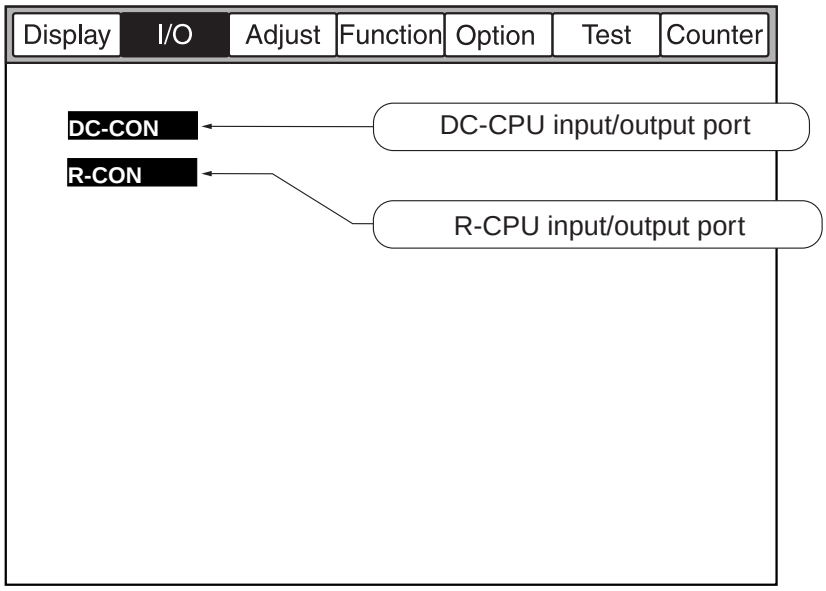

Figure 13-713

1. DC-CPU I/O>DC-CON

Address	bit	Description	Remarks
P001	15	buffer path unit jam detection	1: paper present
	14	not used	
	13	internal delivery sensor (PS12) signal	1: paper present
	12	external delivery sensor (PS31) signal	1: paper present
	11	separation sensor (PS7) signal	1: paper present
	10	post-transfer paper sensor (PS6) signal	1: paper present
	9	pre-transfer paper sensor (PS5) signal	1: paper present
	8	registration sensor (PS70) signal	1: paper present
	7	pre-registration sensor (PS30) signal	1: paper present
	6	transparency sensor (PS69) signal	1: paper present (plain paper)
	5	multifeeder pickup sensor (PS9) signal	1: paper present
	4	deck pickup sensor (PS101) signal	1: paper present
	3	re-pickup vertical path sensor (PS28) signal	1: paper present
	2	pickup vertical path 1 sensor (PS28) signal	1: paper present
	1	pickup vertical path 2 sensor (PS26) signal	1: paper present
	0	pickup vertical path 3 sensor (PS27) signal	1: paper present
P002	15	pre-registration sensor (PS30) signal	1: paper present
	14	not used	
	13	multifeeder paper sensor (PS15) signal	1: paper present
	12	deck paper absent sensor (PS102) signal	1: paper present
	11	duplexing tray paper sensor (PS36) signal	1: paper present
	10	cassette 1 paper sensor (PS20) signal	1: paper present
	9	cassette 2 paper sensor (PS24/DPS24) signal	1: paper present
	8	cassette 3 paper sensor (PS25/DPS25)	1: paper present
	7	not used	
	6	not used	
	5	not used	
	4	duplexing reversal paper sensor (PS35) signal	1: paper present
	3	duplexing path paper sensor (PS34) signal	1: paper present
	2	duplexing inlet paper sensor (PS37) signal	1: paper present
	1	delivery vertical path 2 sensor (PS33) signal	1: paper present
	0	delivery vertical path 1 sensor (PS32) signal	1: paper present

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I/O>DC-CON

Address	bit	Description	Remarks
P003	15	hopper motor (M10) ready signal	0: READY
	14	transfer drum cleaner brush motor (M8) ready signal	0: READY
	13	not used	
	12	duplexing motor (M14) ready signal	0: READY
	11	laser scanner motor (M3) ready signal	0: READY
	10	fixing motor (M5) ready signal	0: READY
	9	drum motor (M2) ready signal	0: READY
	8	main motor (M4) ready signal	0: READY
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	not used	
	2	not used	
	1	not used	
	0	not used	
P004	15	not used	
	14	paper deck connect signal	1: connect
	13	duplexing unit connect	0: connect
	12	buffer path unit connect signal	1: buffer path is present
	11	transfer drawer connector connect signal	0: transfer unit is present
	10	registration path driver drawer connect signal	0: connected
	9	transfer drawer connector signal	0: lever is set
	8	fixing drawer connector signal	0: connected
	7	control switch (SW2) off detection	1: OFF
	6	multifeeder tray open/closed sensor (PS62) signal	1: open
	5	not used	
	4	buffer door switch signal	1: open
	3	pickup cover sensor (PS44) signal	1: open
	2	left front cover sensor (PS42) signal	0: open
	1	right front cover sensor (PS41) signal	0: open
	0	delivery cover sensor (PS43) signal	0: open

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I/O>DC-CON

Address	bit	Description	Remarks
P005	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	pickup holder model code 3 signal	
	10	pickup holder model code 2 signal	
	9	pickup holder model code 1 signal	
	8	pickup holder model code 0 signal	
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	cassette 2 paper length sensor 1 (PSU2) signal	1: ON
	2	cassette 2 paper length sensor 0 (PSU2) signal	1: ON
	1	cassette 3 paper length sensor 1 (PSU3/DPSU3) signal	1: ON
	0	cassette 3 paper length sensor (PSU3/DPSU3) signal	1: ON
P006	15	not used	
	14	Bk toner level sensor (TS4) signal not used	0: lower than specified
	13	not used	
	12	Y toner level sensor (TS3) signal	0: lower than specified
	11	not used	
	10	C toner level sensor (TS2)	0: lower than specified
	9	not used	
	8	M toner level sensor (TS1) signal	0: lower than specified
	7	waste toner feedscrew locked detecting switch (SW7) signal	0: locked
	6	waste toner case full sensor (PS68) signal	1: full
	5	not used	
	4	fixing oil level sensor (PS10) signal	0: lower than specified
	3	fixing upper cleaning belt length sensor (PS11) signal	0: belt absent
	2	fixing lower cleaning belt length sensor (PS67) signal	0: belt absent
	1	not used	
	0	not used	

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I/O>DC-CON

Address	bit	Description	Remarks
P007	15	multifeeder lifter H sensor (PS17) signal	1: ON
	14	multifeeder lifter L sensor (PS18) signal	1: ON
	13	deck lifter upper limit sensor (PS103) signal	1: upper limit
	12	not used	
	11	not used	
	10	cassette 1 lifter sensor (PS19) signal	1: ON
	9	cassette 2 lifter sensor (PS22/DPS22) signal	1: ON
	8	cassette 3 lifter sensor (PS23/DPS23) signal	1: ON
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	shutoff (SHUTOFF) error detection	0: error
	2	SSR2 error detection	0: error
	1	not used	
	0	not used	
P008	15	not used	
	14	not used	
	13	counter mode 5 signal	
	12	counter mode 4 signal	
	11	counter mode 3 signal	
	10	counter mode 2 signal	
	9	counter mode 1 signal	
	8	counter mode 0 signal	
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	not used	
	2	cassette 1 sensor (PS46) signal	1: cassette is present
	1	cassette 2 sensor (PS47/DPS47) signal	1: cassette is present
	0	cassette 3 sensor (PS48/DPS48) signal	1: cassette is present

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I/O>DC-CON

Address	bit	Description	Remarks
P009	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	C sensor (PS4) signal	1: ON
	9	side B sensor (PS3) image leading edge signal	1: ON (light-blocking plate present)
	8	side A sensor (PS2) image leading edge signal	1: ON (light-blocking plate present)
	7	not used	
	6	not used	
	5	not used	
	4	paper jogging guide HP sensor (PS40) signal	1: HP
	3	attraction/transfer locking cam home position sensor (PS8) signal	1: HP
	2	transfer drum cleaner HP sensor (PS59) signal	1: HP
	1	transfer drum HP sensor (PS57) signal	1: HP
	0	not used	
P00A	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	Bk developing assembly HP sensor (PS55) signal	1: HP
	10	Y developing assembly HP sensor (PS53) signal	1: HP
	9	C developing assembly HP sensor (PS51) signal	1: HP
	8	M developing assembly HP sensor (PS49) signal	1: HP
	7	not used	
	6	polishing roller motor (M9) error detection	1: error
	5	multifeeder lifter motor (M15) error detection	1: error
	4	deck lifter motor (M101) error detection	1: error
	3	not used	
	2	cassette 1 lifter motor (M11) error detection	1: error
	1	cassette 2 lifter motor (M12/DM2) error detection	1: error
	0	cassette 3 lifter motor (M13/DM13) error detection	1: error

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I/O>DC-CON

Address	bit	Description	Remarks
P00B	15	power supply cooling fan (FM9) error detection	1: error
	14	not used	
	13	not used	
	12	24 V off detection (linked to door)	0: OFF
	11	not used	
	10	internal static eliminator high voltage error	1: error
	9	HVT AC error detection	1: error
	8	cleaning blade reciprocating motor (M7) error detection	1: error
	7	buffer path unit locking cam sensor signal	1: HP
	6	not used	
	5	not used	
	4	not used	
	3	not used	
	2	not used	
	1	pre-cleaning paper sensor (PS71) signal	1: paper present
	0	not used	
P00C	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	internal/external static eliminator high voltage switch signal 1	
	8	internal/external static eliminator high voltage switch signal 0	
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	fixing motor (M5) CLK signal	Alternates between 0 and 1.
	2	not used	
	1	drum motor (M2) CLK signal (divided by 1/2)	Alternates between 0 and 1.
	0	drum motor (M2) CLK signal	Alternates between 0 and 1.

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I/O>DC-CON

Address	bit	Description	Remarks
P00D	15	not used	1: HP
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	not used	
	8	not used	
	7	fixing oil pump driver error detection	0: error if pump is in operation. 1: error if pump is at rest.
	6	not used	
	5	fixing upper thermistor open circuit detection	1: open circuit
	4	fixing lower thermistor open circuit detection	1: open circuit
	3	fixing upper heater error detection	1 error
	2	fixing lower heater error detection	1 error
	1	SSR1 (fixing upper heater side) error detection	1 error
	0	SSR1 (fixing lower heater side) error detection	1 error
P00E	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	not used	
	8	not used	
	7	not used	
	6	toner suction fan (FM6) error detection	1: error
	5	not used	
	7	not used	
	3	not used	
	2	not used	
	1	not used	
	0	delivery cooling fan (FM11) error detection	1: error

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I/O>DC-CON

Address	bit	Description	Remarks
P00F	15-0	not used	
P010	15-0	not used	
P011	15	hard check output	
	14	hard check output	
	13	har d check output	
	12	hard check output	
	11	hard check output	
	10	hard check output	
	9	hard check output	
	8	hard check output	
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	not used	
	2	not used	
	1	not used	
	0	pre-exposure lamp (LA1) activation signal	1: ON
P012	15	laser scanner motor (M3) clock switch signal	
	14	transfer drum cleaner brush motor (M8) drive signal	0: ON
	13	duplexing motor (M14)	0: ON
	12	not used	
	11	not used	
	10	not used	
	9	cleaning blade reciprocating motor (M7) drive signal	1: ON
	8	laser sensor motor (M3) drive signal	0: ON
	7	Bk toner supply clutch (CL8) drive signal	1: ON
	6	Y toner supply clutch (CL7) drive signal	1: ON
	5	C toner supply clutch (CL6) drive signal	1: ON
	4	M toner supply clutch (CL5) drive signal	1: ON
	3	Bk developing cylinder clutch (CL4) drive signal	1: ON
	2	Y developing cylinder clutch (CL3) drive signal	1: ON
	1	C developing cylinder clutch (CL2) drive signal	1: ON
	0	M developing cylinder clutch (CL1) drive signal	1: ON

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I/O>DC-CON

Address	bit	Description	Remarks
P013	15	state of the fixing heater	0: during WMUP/COPY 1: during temperature control/STBY
	14	not used	
	13	transparency sensor LED (PS69L) ON signal	1: ON
	12	pre-cleaning paper sensor LED (PS71L) ON signal	1: ON
	11	fixing upper heater drive signal	1: ON
	10	fixing lower heater drive signal	1: ON
	9	fixing oil pump (PSP1) drive signal	0: ON
	8	SSR2	1: ON
	7	not used	
	6	not used	
	5	stopper plate solenoid (SL12) drive signal	0: open, 1: closed
	4	stopper plate solenoid (SL12) drive signal	0: closed, 1: open
	3	not used	
	2	not used	
	1	not used	
	0	duplexing feeding clutch (CL14) drive signal	1: ON
P014	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	Bk toner concentration measurement LED ON signal	1: ON
	10	Y toner concentration measurement LED ON signal	1: ON
	9	C toner concentration measurement LED ON signal	1: ON
	8	M toner concentration measurement LED ON signal	1: ON
	7	not used	
	6	not used	
	5	primary charging wire cleaning motor (M6) forward signal	0: forward, 1: reverse
	4	primary charging wire cleaning motor (M6) reverse signal	1: forward, 0: reverse
	3	not used	1: ON
	2	not used	1: ON
	1	polishing roller motor (M9) reverse rotation signal	1: reverse, 0: normal direction
	0	polishing roller motor (M9) normal rotation signal	0: reverse, 1: normal (roller contact)

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I/O>DC-CON

Address	bit	Description	Remarks
P015	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	counter 3 (CNT4) signal	
	10	counter 2 (CNT3) signal	
	9	counter 1 (CNT2) signal	
	8	counter 0 (CNT1) signal	
	7	registration jam timing signal	
	6	deck sensor select signal 2	
	5	deck sensor select signal 1	
	4	deck sensor select signal 0	
	3	pre-registration jam timing signal	
	2	pickup sensor select signal 2	
	1	pickup sensor select signal 1	
	0	pickup sensor select signal 0	
P016	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	A/D multiplex select signal 2	
	9	A/D multiplex select signal 1	
	8	A/D multiplex select signal 0	
	7	not used	
	6	not used	
	5	fixing upper cleaning belt solenoid (SL1)	1: ON
	4	fixing lower cleaning belt solenoid (SL2)	1: ON
	3	delivery vertical path clutch (CL19)	1: ON
	2	delivery paper deflecting plate solenoid (SL10)	1: ON
	1	separation claw solenoid (SL4)	1: ON
	0	shutoff signal	1: shutoff

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I/O>DC-CON

Address	bit	Description	Remarks
P017	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	not used	
	8	not used	
	7	registration clutch (CL9) drive signal	1: ON
	6	multifeeder feed clutch (CL10) drive signal	1: ON
	5	multifeeder pickup clutch (CL16) drive signal	1: ON
	4	deck pickup clutch (CL102) drive signal	1: ON
	3	duplexing feed clutch (CL14) drive signal	1: ON
	2	cassette 1 pickup clutch (CL1) drive signal	1: ON
	1	cassette 2 pickup clutch (CL12/DCL12) drive signal	1: ON
	0	cassette 3 pickup clutch (CL13/DCL13) drive signal	1: ON
P018	15	electrical unit cooling fan (FM8) drive signal 1	0: full speed, 1: half speed
	14	electrical unit cooling fan (FM8) drive signal 0	1: full speed, 0: half speed
	13	IP cooling fan (FM7) drive signal 1	0: full speed, 1: half speed
	12	IP cooling fan (FM7) drive signal 0	1: full speed, 0: half peed
	11	exhaust fan (FM2) drive signal 1	0: full speed, 1: half speed
	10	exhaust fan (FM2) drive signal 0	1: full speed, 0: half speed
	9	ozone suction fan (FM5) drive signal 1	1: ON
	8	ozone suction fan (FM5) drive signal 0	1: ON
	7	toner suction fan (FM6) drive signal 1	1: ON
	6	toner suction fan (FM6) drive signal 0	1: ON
	5	laser scanner motor cooling fan (FM4) drive signal	1: ON
	4	not used	
	3	primary charging assembly fan (FM3) drive signal 1	0: full speed, 1: half speed
	2	primary charging assembly fan (FM3) drive signal 0	1: full speed, 0: half speed
	1	delivery cooling fan (FM11) drive signal 1	1: ON
	0	delivery cooling fan (FM11) drive signal 0	1: ON

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I/O>DC-CON

Address	bit	Description	Remarks
P019	15	No. 3/No. 4 DC remote signal	0: remote
	14	No. 3/No. 4 WBP remote signal	0: remote
	13	No. 1/No. 2 DC remote signal	0: remote
	12	No. 1/No. 2 WBP remote signal	0: remote
	11	DC output select 4 signal	0: select
	10	DC output select 3 signal	0: select
	9	DC output select 2 signal	0: select
	8	DC output select 1 signal	0: select
	7	transfer acceleration remote signal	1: accelerate, 0: 0 µ
	6	trainer 0 µ remote signal	0: accelerate, 1: 0 µ
	5	transfer DC remote signal	0: remote
	4	attraction acceleration remote signal	1: accelerate, 0: 0 µ
	3	attraction 0 µ remote signal	0: accelerate, 1: 0 µ
	2	attraction DC remote signal	0: remote
	1	grid remote signal	0: remote
	0	primary DC remote signal	0: remote
P01A	15	HV-DEV-ENABLE signal	0: ENABLE
	14	HV-DC-ENABLE signal	0: ENABLE
	13	HV-AC-ENABLE signal	0: ENABLE
	12	pre-transfer DC remote signal	0: remote
	11	separation DC remote signal	0: remote
	10	separation AC remote signal	0: remote
	9	internal static eliminator DC remote signal	0: remote
	8	internal static eliminator AC remote signal	0: remote
	7	not used	
	6	multifeeder lifter motor (M15) reverse drive signal	1: down
	5	multifeeder lifter motor (M15) normal rotation drive signal	1: up
	4	deck lifter motor (M101) drive signal	0: ON
	3	deck lifter down signal	1: down
	2	cassette 1 lifter motor (M11) drive signal	1: ON
	1	cassette 2 lifter motor (M12/DM12) drive signal	1: ON
	0	cassette 3 lifter motor (M13/DM13) drive signal	1: ON

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I/O>DC-CON

Address	bit	Description	Remarks
P01B	15	deck open sensor (PS109) signal	0: open
	14	deck set sensor (PS105) signal	0: set
	13	deck open switch (SW101) signal	1: open
	12	deck stack level upper sensor (PS107) signal	0: paper present
	11	deck paper level lower sensor (PS108) signal	0: paper present
	10	deck detection signal	0: deck present
	9	deck lifter lower limit detecting switch (SW102) signal	0: lower limit
	8	not used	
	7	not used	
	6	not used	
	5	hopper motor (M10) reverse rotation drive signal	1: reverse (stirring)
	4	hopper motor (M10) drive signal	0: ON
	3	fixing motor (M5) speed signal 1	1: low speed
	2	fixing motor (M5) speed signal 0	0: normal
	1	not used	
	0	fixing motor (M5) driver signal	0: ON
P01C	15	not used	
	14	not used	
	13	main motor reversal signal	
	12	main motor (M4) drive signal	0 : ON
	11	drum motor (M2) speed signal 1	1: low speed
	10	drum motor (M2) speed signal 0	0: low speed, 1: BD sync
	9	drum motor (M2) reversal signal	1: normal rotation
	8	drum motor (M2) drive signal	0: ON
	7	deck open indication (LED100) ON signal	1: ON
	6	deck open solenoid (SL102) drive signal	1: ON
	5	not used	
	4	not used	
	3	not used	
	2	not used	
	1	postcard feeding clutch (CL18) drive signal	1: ON
	0	registration roller releasing solenoid (SL5) drive signal	1: ON

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I/O>DC-CON

Address	bit	Description	Remarks
P01D	15	not used	
	14	not used	
	13	multifeeder pickup solenoid (SL14) drive signal	1: ON
	12	deck pickup roller releasing solenoid (SL101) drive signal	1: ON
	11	duplexing paper feed roller solenoid (SL13) drive signal	1: ON
	10	pickup roller 1 solenoid (SL7)	1: ON
	9	pickup roller 2 solenoid (SL8/DSL8)	1: ON
	8	pickup roller 3 solenoid (SL9/DSL9)	1: ON
	7	buffer path unit solenoid (SL1) drive signal	1: ON
	6	buffer path unit clutch (CL1) drive signal	1: ON
	5	buffer path unit solenoid (SL2) drive signal	-
	4	buffer path unit cam HP select signal	0: left side when viewed from rear
	3	duplexing stacking guide plate solenoid (SL15) drive signal	1: ON
	2	not used	
	1	attraction roller solenoid (SL6) drive signal	1: ON
	0	separation push-up solenoid (SL3) drive signal	0: ON
P01E	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	not used	
	8	not used	
	7	not used	
	6	not used	
	5	back suction fan (FM16) drive signal 1	1: ON
	4	back suction fan (FM16) drive signal 0	1: ON
	3	exhaust fan (FM2) full speed drive signal	0: full speed, 1: half speed
	2	exhaust fan (FM2) half speed drive signal	1: full speed, 0: half speed
	1	IP cooling fan (FM7) full speed drive signal	0: full speed, 1: half speed
	0	IP cooling fan (FM7) half speed drive signal	1: full speed, 0: half speed

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I/O>DC-CON

Address	bit	Description	Remarks
P01F	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	not used	
	8	not used	
	7	ozone suction fan (FM5) drive signal	1: ON
	6	not used	
	5	primary charging assembly fan (FM3) full speed drive signal	1: full speed
	4	primary charging assembly fan (FM3) half speed drive signal	1: half speed
	3	laser scanner motor cooling fan (FM4) drive signal	1: ON
	2	not used	
	1	electrical unit cooling fan (FM8) full speed drive signal	1: full speed
	0	electrical unit cooling fan (FM8) half speed drive signal	half speed
P020	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	not used	
	8	not used	
	7	ozone suction fan (FM5) error detection	1: error
	6	primary charging assembly fan (FM3) error detection	1: error
	5	laser scanner motor cooling fan (FM4) error detection	1: error
	4	electrical unit cooling fan (FM8) error detection	1: error
	3	not used	
	2	back suction fan (FM16) error direction	1: error
	1	exhaust fan (FM2) error detection	1: error
	0	IP cooling fan (FM7) error detection	1: error

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I/O>DC-CON

Address	bit	Description	Remarks
P021	15	not used	
	14	not used	
	13	not used	
	12	not used	
	11	not used	
	10	not used	
	9	not used	
	8	not used	
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	not used	
	2	not used	
	1	LD-J2DCON	1: download mode
	0	power switch off signal	1: OFF
P022	15-0	not used	
P023	15-0	not used	
P024	15-0	not used	
P025	15-0	not used	
P026	15-0	not used	
P027	15-0	not used	
P028	15-0	not used	

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2. R-CPU I/O>R-CON

Address	bit	Description	Remarks
P001	15-8	not used	
	7	not used	
	6	not used	
	5	WATCH DOG pulse signal	
	4	ECO PCB internal signal	
	3	ECO PCB internal signal	
	2	ECO PCB internal signal	
	1	R-CON to DC-CON power ready signal	
	0	R-CON to PANEL-CON power ready signal	
P002	15-8	not used	
	7	digitizer request signal	1: request
	6	CVR time rest signal	1: RESET
	5	scanning lamp (LA2) ON signal	1: ON
	4	not used	
	3	original exposure system cooling fan 1 (FM1) half speed drive signal	1: half speed, 0: full speed
	2	original exposure system cooling fan 1 (FM1) full speed drive signal	1: full speed, 0: half speed
	1	original scanner motor driver RESET signal	1: RESET
	0	projector SSR-ON signal	1: ON
P003	15-8	not used	
	7	digitizer ACK signal	1: ACK
	6	digitizer connect signal	0: connect
	5	original exposure system cooling fan (FM1) error detected	1: error
	4	READER-ITOP-B input signal	0: side B image leading edge
	3	READER-ITOP-A input signal	0: side B image leading edge
	2	CC-V connect signal	0: connect
	1	DC-CON to R-CON power ready signal	
	0	PANEL-CON to R-CON power ready signal	

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I/O>R-CON

Address	bit	Description	Remarks
P004	15-8	not used	
	7	internal signal	
	6	internal signal	
	5	internal signal	
	4	internal signal	
	3	internal signal	
	2	internal signal	
	1	internal signal	
	0	internal signal	
P005	15-8	not used	
	7	RS-232C input signal	
	6	scanner IPC error 3	1: error
	5	scanner IPC error 2	1: error
	4	scanner IPC error 1	1: error
	3	scanning lamp (LA2) ON detection signal	1: ON
	2	CVR error detection	0: error
	1	internal signal	
	0	internal signal	
P006	15-8	not used	
	7	RS-232C output signal	
	6	internal signal	
	5	not used	
	4	not used	
	3	not used	
	2	internal signal	
	1	internal signal	
	0	internal signal	

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I/O>R-CON

Address	bit	Description	Remarks
P007	15-8	not used	
	7	not used	
	6	not used	
	5	not used	
	4	not used	
	3	original exposure system cooling fan 2 (FM14) half speed drive signal	1: half speed
	2	original exposure system cooling fan 2 (FM14) full speed signal	1: full speed
	1	CC-X count signal	1: count increase
	0	CC-V count signal	1: count increase
P008	15-8	not used	
	7	internal signal	
	6	internal signal	
	5	internal signal	
	4	internal signal	
	3	control switch (SW2) detection signal	0: ON
	2	not used	
	1	internal signal	
	0	download mode signal	download mode
P009	15-8	not used	
	7	for factory adjustment	
	6	not used	
	5	not used	
	4	for factory adjustment	
	3	original exposure system cooling fan 3 (FM15) error detection	1: error
	2	original exposure system cooling fan 2 (FM14) error detection	1: error
	1	PCB check mode 1	
	0	PCB check mode 0	

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D. ADJUST (adjustment mode)

The Level 2 screen of ADJUST mode looks like the following, and it provides the items shown on the next page.

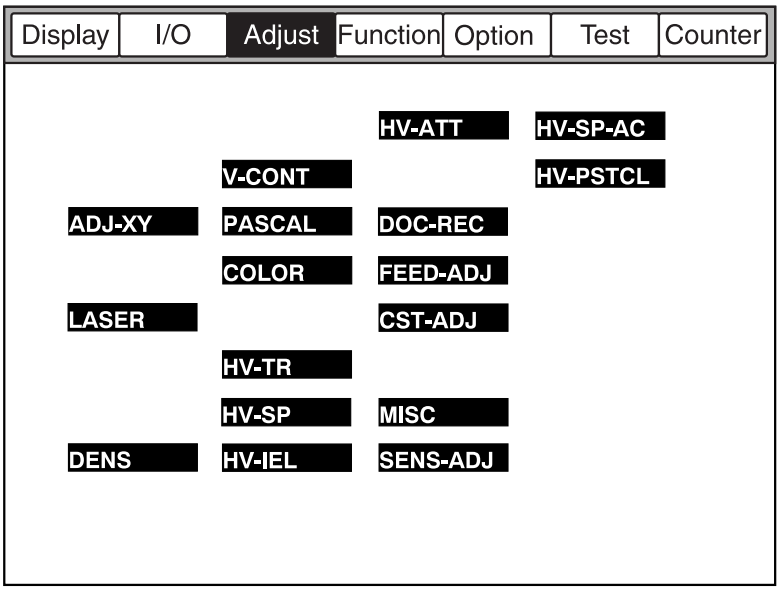

Figure 13-714

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COPIER>ADJUST Items

Level 1	Level 2	Level 3	Settings	Description
ADJUST	ADJ-XY	ADJ-X	-200 to +200	adjusts the image read start position (X direction; units of 0.1 mm)
		ADJ-Y	-100 to +100	adjusts the image read start position (Y direction; in units of 0.1 mm)
		ADJ-S	0 to 32	adjusts measurement position for shading correction from the standard white plate (in units of 0.1 mm)
		ADJ-J	0 to 500	adjusts the period of acceleration for the original scanner motor
	LASER	T-V00	0 to 255	enters the laser control initial value at V00 for text mode (800 lines) as for laser unit replacement
		T-VFF	0 to 255	enters the laser control initial value at VFF for text mode (800 lines) as for laser unit replacement
		P3-V00	0 to 255	enters the laser control initial value at V00 for photo mode (400 lines) as for laser unit replacement
		P3-VFF-1	0 to 255	enters the laser control initial value at VFF (45%) for photo mode (400 lines) as for laser unit replacement
		P3-VFF-2	0 to 255	enters the laser control initial value at VFF (55 %) for photo mode (400 lines) as for laser unit replacement
		P3-VFF-3	0 to 255	enters the laser control initial value at VFF (65%) for photo mode (400 lines) as for laser unit replacement
		P3-VFF-4	0 to 255	enters the laser control initial value at VFF (70%) for photo mode (400 lines) as for laser unit replacement
		POWER	---	turns on the laser output for laser power adjustment (OK key to start, Stop key to stop)
		T-V00-ON	---	turns on the laser output for a check on T-V00 (OK key to start, Stop key to stop)
		T-VFF-ON	---	turns on the laser output for a check on T-VFF (OK key to start, Stop key to stop)
		P3V00-ON	---	turns on the laser output for a check on P3-V00 (OK key to start, Stop key to stop)
		P3-V1-ON	---	turns on the laser output for a check on P3-VFF-1 (OK key to start, Stop key to stop)
		P3-V2-ON	---	turns on the laser output for a check on P3-VFF-2 (OK key to start, Stop key to stop)
		P3-V3-ON	---	turns on the laser output for a check on P3-VFF-3 (OK key to start, Stop key to stop)
		P3-V4-ON	---	turns on the laser output for a check on P3-VFF-4 (OK key to start, Stop key to stop)

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DENS	SGNL-Y	0 to 1023	concentration signal of Y toner during INIT for ATR control
	SGNL-M	0 to 1023	concentration signal of M toner during INIT for ATR control
	SGNL-C	0 to 1023	concentration signal of C toner during INIT for ATR control
	REF-Y	0 to 1023	concentration reference signal of Y toner during INIT for ATR control
	REF-M	0 to 1023	concentration reference signal of M toner during INIT for ATR control
	REF-C	0 to 1023	concentration reference signal of C toner during INIT for ATR control
	SIGG-Y	0 to 255	gain for concentration reference signal of Y toner during ATR control
	SIGG-M	0 to 255	gain for concentration reference signal of M toner during ATR control
	SIGG-C	0 to 255	gain for concentration reference signal of C toner during ATR control
	RGAIN-K	0 to 255	gain for concentration reference signal of Bk toner during toner concentration control
	D-Y-TRGT	0 to 1023	initial value of the concentration target of Y toner during ART control
	D-M-TRGT	0 to 1023	initial value of the concentration target of M toner during ART control
	D-C-TRGT	0 to 1023	initial value of the concentration target of C toner during ART control
	PTOFST-Y	-127 to +128	correction value (%) for the laser output of Y toner during ART control
	PTOFST-M	-127 to +128	correction value (%) for the laser output of M toner during ART control
	PTOFST-C	-127 to +128	correction value (%) for the laser output of C toner during ART control
	PTOFST-K	-127 to +128	correction value (%) for the laser output of Bk toner during ART control
	D-REF-Y	0 to 1023	reference signal value for the concentration sensor of Y toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
	D-REF-M	0 to 1023	reference signal value for the concentration sensor of M toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
	D-REF-C	0 to 1023	reference signal value for the concentration sensor of C toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
	D-REF-K	0 to 1023	reference signal value for the concentration sensor of Bk toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
	D-REF-4	0 to 1023	reference signal value for the concentration sensor of all toners in relation to the reflection intensity of light from the photosensitive drum (upon initialization)

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D-SGNL-Y	0 to 1023	reference signal value for the concentration sensor of Y toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
D-SGNL-M	0 to 1023	reference signal value for the concentration sensor of M toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
D-SGNL-C	0 to 1023	reference signal value for the concentration sensor of C toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
D-SGNL-K	0 to 1023	reference signal value for the concentration sensor of Bk toner in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
D-SGNL-4	0 to 1023	reference signal value for the concentration sensor of all toners in relation to the reflection intensity of light from the photosensitive drum (upon initialization)
P-REF-Y	0 to 1023	reference signal value of Y toner on the photosensitive drum during INIT for ATR control
P-REF-M	0 to 1023	reference signal value of M toner on the photosensitive drum during INIT for ATR control
P-REF-C	0 to 1023	reference signal value of C toner on the photosensitive drum during INIT for ATR control
P-REF-K	0 to 1023	reference signal value of Bk toner on the photosensitive drum during INIT for ATR control
P-SGNL-Y	0 to 1023	signal value of Y toner on the photosensitive drum during INIT for ATR control
P-SGNL-M	0 to 1023	signal value of M toner on the photosensitive drum during INIT for ATR control
P-SGNL-C	0 to 1023	signal value of C toner on the photosensitive drum during INIT for ATR control
P-SGNL-K	0 to 1023	signal value of Bk toner on the photosensitive drum during INIT for ATR control
SIGG-K	0 to 255	gain for concentration reference signal of Bk toner during ATR control
SIGG-P-M	0 to 255	correction of the patch data gain for ATR control when INIT-M is executed
SIGG-P-C	0 to 255	correction of the patch data gain for ATR control when INIT-C is executed
SIGG-P-Y	0 to 255	correction of the patch data gain for ATR control when INIT-Y is executed
SIGG-P-K	0 to 255	correction of the patch data gain for ATR control when INIT-K is executed
RGAN-P-M	0 to 255	correction of the patch gain for toner density control when INIT-M is executed
RGAN-P-C	0 to 255	correction of the patch gain for toner density control when INIT-C is executed
RGAN-P-Y	0 to 255	correction of the patch gain for toner density control when INIT-Y is executed

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	RGAN-P-K	0 to 255	correction of the patch gain for toner density control when INIT-K is executed
V-CONT	VBACK-Y	-4 to +4	Y color adjustment for de-fogging potential (reference: 0)
	VBACK-M	-4 to +4	M color adjustment for de-fogging potential (reference: 0)
	VBACK-C	-4 to +4	C color adjustment for de-fogging potential (reference: 0)
	VBACK-K	-4 to +4	Bk color adjustment for de-fogging potential (reference: 0)
	EPOTOFST	0 to 1023	potential offset value (reference: 0)
	RF-CRT-Y	-25 to +25	offset value adjustment (%) for Y laser strength
	PF-CRT-M	-25 to +25	offset value adjustment (%) for M laser strength
	PF-CRT-C	-25 to +25	offset value adjustment (%) for C laser strength
	PF-CRT-K	-25 to +25	offset value adjustment (%) for Bk laser strength
PASCAL	OFST-P-Y	-127 to +128	target value setting of Y for high-density areas during auto gradation correction
	OFST-P-M	-127 to +128	target value setting of M for high-density areas during auto gradation correction
	OFST-P-C	-127 to +128	target value setting of C for high-density areas during auto gradation correction
	OFST-P-K	-127 to +128	target value setting of Bk for high-density areas during auto gradation correction
COLOR	ADJ-Y	-8 to +8	color balance adjustment of Y for the user (reference: 0)
	ADJ-M	-8 to +8	color balance adjustment of M for the user (reference: 0)
	ADJ-C	-8 to +8	color balance adjustment of C for the user (reference: 0)
	ADJ-K	-8 to +8	color balance adjustment of Bk for the user (reference: 0)
	OFST-Y	-16 to +16	color balance adjustment and density of Y light areas
	OFST-M	-16 to +16	color balance adjustment and density of M light areas
	OFST-C	-16 to +16	color balance adjustment and density of C light areas
	OFST-K	-16 to +16	color balance adjustment and density of Bk light areas
	P-ADJ-Y	-8 to +8	color balance adjustment of Y for output from an external image controller
	P-ADJ-M	-8 to +8	color balance adjustment of M for output from an external image controller
	P-ADJ-C	-8 to +8	color balance adjustment of C for output from an external image controller
	P-ADJ-K	-8 to +8	color balance adjustment of Bk for output from an external image controller
	P-OFST-Y	-16 to +16	color balance adjustment of Y light areas for output from an external image controller

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	P-OFST-M	-16 to +16	color balance adjustment of M light areas for output from an external image controller
	P-OFST-C	-16 to +16	color balance adjustment of C light areas for output from an external image controller
	P-OFST-K	-16 to +16	color balance adjustment of Bk light areas for output from an external image controller
HV-TR	HV-TR	-4 to +4	adjustment of transfer high-voltage output
			Environment A (A-ZONE)
	TR-L1	-4 to +4	for thin paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
	TR-L2	-4 to +4	for thin paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
	TR-N1	-4 to +4	for plain paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
	TR-N2	-4 to +4	for plain paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
	TR-T1	-4 to +4	for thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
	TR-T2	-4 to +4	for thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
	TR-UT1	-4 to +4	for extra thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
	TR-UT2	-4 to +4	for extra thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
	TR-S1-1	-4 to +4	for special paper 1, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
	TR-S2-1	-4 to +4	for special paper 2, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
	TR-OHP	-4 to +4	for transparencies, transfer charging bias adjustment (in units of µA)
	TR-POST	-4 to +4	for postcards, transfer charging bias adjustment (in units of µA)

Cont'd Cont'd

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		Environment B (B-ZONE)
TR-L1	-4 to +4	for thin paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-L2	-4 to +4	for thin paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
TR-N1	-4 to +4	for plain paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-N2	-4 to +4	for plain paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
TR-T1	-4 to +4	for thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-T2	-4 to +4	for thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
TR-UT1	-4 to +4	for extra thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-UT2	-4 to +4	for extra thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
TR-S1-1	-4 to +4	for special paper 1, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-S2-1	-4 to +4	for special paper 2, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-OHP	-4 to +4	for transparencies, transfer charging bias adjustment (in units of µA)
TR-POST	-4 to +4	for postcards, transfer charging bias adjustment (in units of µA)

Cont'd Cont'd

		Environment C (C-ZONE)
TR-L1	-4 to +4	for thin paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-L2	-4 to +4	for thin paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
TR-N1	-4 to +4	for plain paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-N2	-4 to +4	for plain paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
TR-T1	-4 to +4	for thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-T2	-4 to +4	for thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
TR-UT1	-4 to +4	for extra thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-UT2	-4 to +4	for extra thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of µA)
TR-S1-1	-4 to +4	for special paper 1, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-S2-1	-4 to +4	for special paper 2, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of µA)
TR-OHP	-4 to +4	for transparencies, transfer charging bias adjustment (in units of µA)
TR-POST	-4 to +4	for postcards, transfer charging bias adjustment (in units of µA)

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HV-SP	HV-SP	-6 to 0	adjustment of separation DC high-voltage output (in units of 50 µA)
			Environment A (A-ZONE)
	SP-L1	-6 to 0	for thin paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
	SP-L2	-6 to 0	for thin paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
	SP-N1	-6 to 0	for plain paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
	SP-N2	-6 to 0	for plain paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
	SP-T1	-6 to 0	for thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
	SP-T2	-6 to 0	for thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
	SP-UT1	-6 to 0	for extra thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
	SP-UT2	-6 to 0	for extra thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
	SP-S1-1	-6 to 0	for special paper 1, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
	SP-S2-1	-6 to 0	for special paper 2, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
	SP-OHP	-6 to 0	for transparencies, separation charging bias adjustment (in units of 50 µA)
	SP-POST	-6 to 0	for postcards, separation charging bias adjustment (in units of 50 µA)
Cont'd	Cont'd		

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		Environment A (A-ZONE)
SP-L1	-6 to 0	for thin paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-L2	-6 to 0	for thin paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-N1	-6 to 0	for plain paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-N2	-6 to 0	for plain paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-T1	-6 to 0	for thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-T2	-6 to 0	for thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-UT1	-6 to 0	for extra thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-UT2	-6 to 0	for extra thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-S1-1	-6 to 0	for special paper 1, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-S2-1	-6 to 0	for special paper 2, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-OHP	-6 to 0	for transparencies, separation charging bias adjustment (in units of 50 µA)
SP-POST	-6 to 0	for postcards, separation charging bias adjustment (in units of 50 µA)

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		Environment C (C-ZONE)
SP-L1	-6 to 0	for thin paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-L2	-6 to 0	for thin paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-N1	-6 to 0	for plain paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-N2	-6 to 0	for plain paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-T1	-6 to 0	for thick paper, transfer charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-T2	-6 to 0	for thick paper, transfer charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-UT1	-6 to 0	for extra thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-UT2	-6 to 0	for extra thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 50 µA)
SP-S1-1	-6 to 0	for special paper 1, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-S2-1	-6 to 0	for special paper 2, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-OHP	-6 to 0	for transparencies, separation charging bias adjustment (in units of 50 µA)
SP-POST	-6 to 0	for postcards, separation charging bias adjustment (in units of 50 µA)

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SP-ON-N1	1 to 32	for plain paper, separation re-charging ON environment adjustment value for single-sided copying or copying on the 1st side of a double-sided copy (in units of 50 µA)
SP-ON-N2	1 to 32	for plain paper, separation re-charging ON environment adjustment value for copying on the 2nd side of a double-sided copy
SP-ON-L1	1 to 32	for thin paper, separation re-charging ON environment adjustment value for single-sided copying or copying on the 1st side of a double-sided copy)
SP-ON-L2	1 to 32	for thin paper, separation re-charging ON environment adjustment value for copying on the 2nd side of a double-sided copy
SP-ON-T1	1 to 32	for thick paper, separation re-charging ON environment adjustment value for single-sided copying or copying on the 1st side of a double-sided copy
SP-ON-T2	1 to 32	for thick paper, separation re-charging ON environment adjustment value for copying on the 2nd side of a double-sided copy
SP-ONUT1	1 to 32	for extra thick paper, separation re-charging ON environment adjustment value for single-sided copying or copying on the 1st side of a double-sided copy
SP-ONUT2	1 to 32	for extra thick paper, separation re-charging ON environment adjustment value for copying on the 2nd side of a double-sided copy
SP-ON-S1	1 to 32	for special paper 1, separation re-charging ON environment adjustment value for single-sided copying or copying on the 1st side of a double-sided copy
SP-ON-S2	1 to 32	for special paper 2, separation re-charging ON environment adjustment value for single-sided copying or copying on the 1st side of a double-sided copy
SP-ONOHP	1 to 32	for transparencies, separation re-charging ON environment adjustment value
SP-ON-PT	1 to 32	for postcards, separation re-charging ON environment adjustment value

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HV-IEL	HV-IEL	-8 to 0	internal static eliminator high-voltage output adjustment (in units of 0.5 kV)
			Environment A (A-ZONE)
	IEL-L1	-8 to 0	for thin paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	IEL-L2	-8 to 0	for thin paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	IEL-N1	-8 to 0	for plain paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	IEL-N2	-8 to 0	for plain paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	IEL-T1	-8 to 0	for thick paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	IEL-T2	-8 to 0	for thick paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	IEL-UT1	-8 to 0	for extra thick paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	IEL-UT2	-8 to 0	for extra thick paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	IEL-S1-1	-8 to 0	for special paper 1, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	IEL-S2-1	-8 to 0	for special paper 2, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	IEL-OHP	-8 to 0	for transparencies, internal static eliminator bias adjustment (in units of 0.5 kV)
	IEL-POST	-8 to 0	for postcards, internal static eliminator bias adjustment (in units of 0.5 kV)

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		Environment B (B-ZONE)
IEL-L1	-8 to 0	for thin paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-L2	-8 to 0	for thin paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-N1	-8 to 0	for plain paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-N2	-8 to 0	for plain paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-T1	-8 to 0	for thick paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-T2	-8 to 0	for thick paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-UT1	-8 to 0	for extra thick paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-UT2	-8 to 0	for extra thick paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-S1-1	-8 to 0	for special paper 1, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-S2-1	-8 to 0	for special paper 2, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-OHP	-8 to 0	for transparencies, internal static eliminator bias adjustment (in units of 0.5 kV)
IEL-POST	-8 to 0	for postcards, internal static eliminator bias adjustment (in units of 0.5 kV)

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		Environment C (C-ZONE)
IEL-L1	-8 to 0	for thin paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-L2	-8 to 0	for thin paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-N1	-8 to 0	for plain paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-N2	-8 to 0	for plain paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-T1	-8 to 0	for thick paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-T2	-8 to 0	for thick paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-UT1	-8 to 0	for extra thick paper, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-UT2	-8 to 0	for extra thick paper, internal static eliminator bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
IEL-S1-1	-8 to 0	for special paper 1, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-S2-1	-8 to 0	for special paper 2, internal static eliminator bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
IEL-OHP	-8 to 0	for transparencies, internal static eliminator bias adjustment (in units of 0.5 kV)
IEL-POST	-8 to 0	for postcards, internal static eliminator bias adjustment (in units of 0.5 kV)

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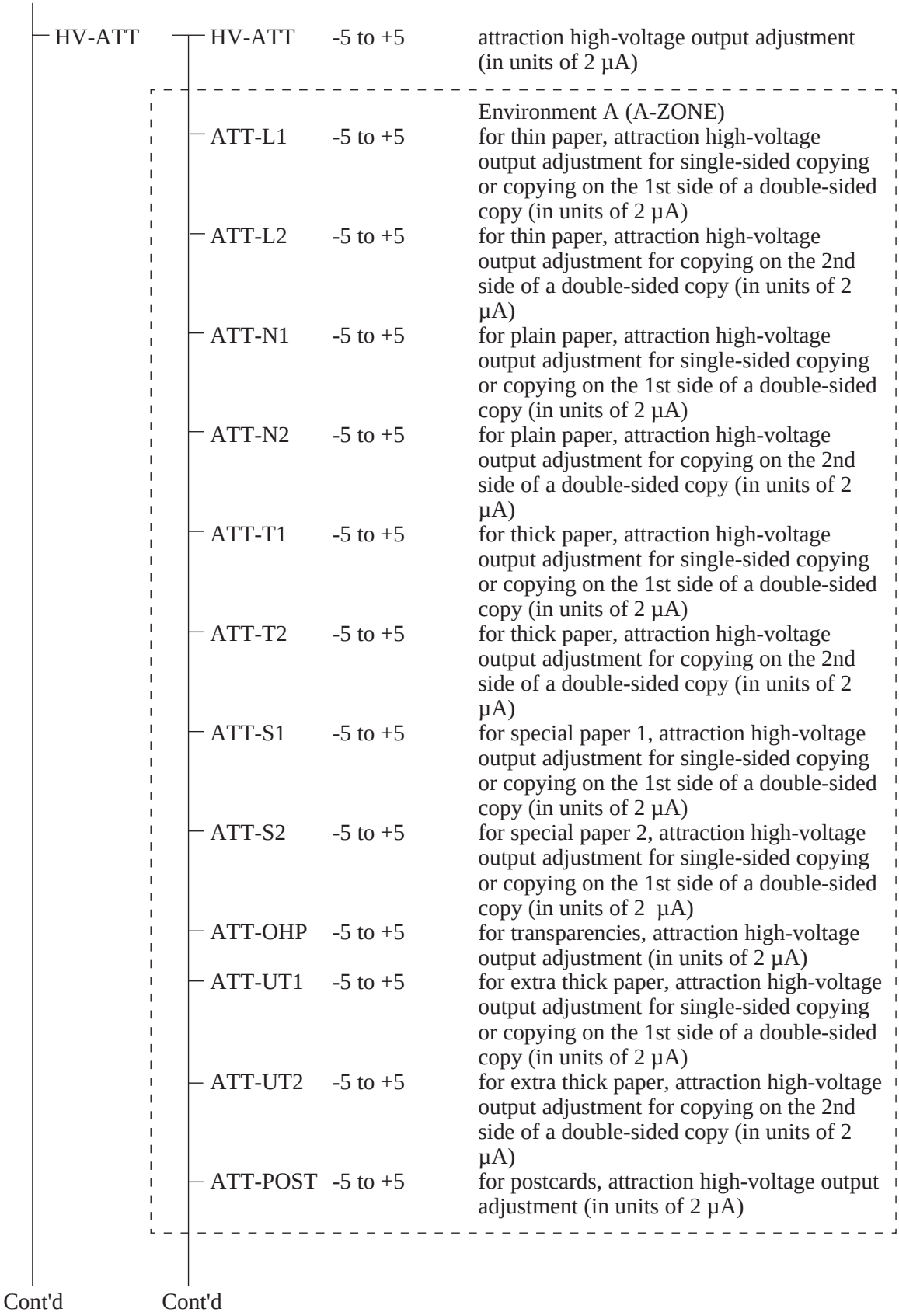
HV-ATT
HV-ATT -5 to +5 attraction high-voltage output adjustment (in units of 2 µA)
Environment A (A-ZONE)
ATT-L1 -5 to +5 for thin paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-L2 -5 to +5 for thin paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-N1 -5 to +5 for plain paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-N2 -5 to +5 for plain paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-T1 -5 to +5 for thick paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-T2 -5 to +5 for thick paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-S1 -5 to +5 for special paper 1, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-S2 -5 to +5 for special paper 2, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-OHP -5 to +5 for transparencies, attraction high-voltage output adjustment (in units of 2 µA)
ATT-UT1 -5 to +5 for extra thick paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-UT2 -5 to +5 for extra thick paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-POST -5 to +5 for postcards, attraction high-voltage output adjustment (in units of 2 µA)
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		Environment B (B-ZONE)
ATT-L1	-5 to +5	for thin paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-L2	-5 to +5	for thin paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-N1	-5 to +5	for plain paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-N2	-5 to +5	for plain paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-T1	-5 to +5	for thick paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-T2	-5 to +5	for thick paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-S1	-5 to +5	for special paper 1, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-S2	-5 to +5	for special paper 2, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-OHP	-5 to +5	for transparencies, attraction high-voltage output adjustment (in units of 2 µA)
ATT-UT1	-5 to +5	for extra thick paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-UT2	-5 to +5	for extra thick paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-POST	-5 to +5	for postcards, attraction high-voltage output adjustment (in units of 2 µA)

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		Environment C (C-ZONE)
ATT-L1	-5 to +5	for thin paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-L2	-5 to +5	for thin paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-N1	-5 to +5	for plain paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-N2	-5 to +5	for plain paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-T1	-5 to +5	for thick paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-T2	-5 to +5	for thick paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-S1	-5 to +5	for special paper 1, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-S2	-5 to +5	for special paper 2, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-OHP	-5 to +5	for transparencies, attraction high-voltage output adjustment (in units of 2 µA)
ATT-UT1	-5 to +5	for extra thick paper, attraction high-voltage output adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 2 µA)
ATT-UT2	-5 to +5	for extra thick paper, attraction high-voltage output adjustment for copying on the 2nd side of a double-sided copy (in units of 2 µA)
ATT-POST	-5 to +5	for postcards, attraction high-voltage output adjustment (in units of 2 µA)

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DOC-REC	DX-XS	-99 to +99	fine-adjustment of the original detection area
	DA-XE	-99 to +99	fine-adjustment of the original detection area
	DA-YS	-99 to +99	fine-adjustment of the original detection area
	DA-YE	-99 to +99	fine-adjustment of the original detection area
	DS-DOC	0 to 31	adjustment of the slice level for original detection
FEED-ADJ	ATT-T-A	-10 to +10	adjustment of side A attraction timing for the transfer drum
	ATT-T-B	-10 to +10	adjustment of side B attraction timing for the transfer drum
	RG-XA	-47 to +47	adjustment of registration in sub scanning direction of side A on the transfer drum
	RG-XB	-47 to +47	adjustment of registration in sub scanning direction of side B on the transfer drum
	RG-Y	-70 to +70	adjustment of registration in main scanning direction on the transfer drum
	TR-DLY-A	-10 to +10	adjustment of position of attraction of side A on the transfer drum
	TR-DLY-B	-10 to +10	adjustment of position of attraction of side B on the transfer drum
	ATT-CHK	1 to 3	specification of position of attraction on the transfer drum during ATT-ON (1: 2-sheet retention of sides B and A; 2: retention on side A, 3: retention on side B)
	ATT-ON	---	executes attraction of copy paper to the transfer drum according to ATTCHK (OK key to start; auto stop)
	RGST-CHK	1 to 3	specifies position of attraction on the transfer drum during RGST-ON (1: 2-sheet retention on sides B and A, 2: retention on side A, 3: retention on side B)
	RGST-ON	---	executes printing for checking registration (retention side) using C according to RGST-CHK (OK key to start; auto stop)
	TR1-CHK	1 to 3	specifies position of attraction on the transfer drum during TR1-ON (1: 2-sheet retention of sides B and A, 2: retention on side A, 3: retention on side B)
	TR2-CHK	1 to 3	specifies position of attraction on the transfer drum during TR2-ON (1: 2-sheet retention of sides B and A, 2: retention on side A, 3: retention on side B)
	TR1-ON	---	executes printing for checking the leading edge margin (1 mm) according to TR1-CHK (OK key to start; auto stop)
	TR2-ON	---	executes printing for checking the leading edge margin (8 mm) according to TR2-CHK (OK key to start; auto stop)
	TR3-ON	---	executes printing for checking a training edge margin according to TR-END-A (OK key to start; auto stop)
	TR4-ON	---	executes printing for checking a training edge margin according to TR-END-B (OK key to start; auto stop)

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	TR-END-A	0 to 25	adjusts the falling edge (trailing edge margin) of transfer high voltage for side A retention
	TR-END-B	0 to 25	adjusts the falling edge (trailing edge margin) of transfer high voltage for side B retention
CST-ADJ	C2-STMTR	0 to 1023	paper width basic value adjustment for STMTR in cassette 2
	C2-A4R	0 to 1023	paper width basic value adjustment for A4R in cassette 2
	C3-STMTR	0 to 1023	paper width basic value adjustment for STMTR in cassette 3
	C3-A4R	0 to 1023	paper width basic value adjustment for A4R in cassette 3
	MF-A4R	0 to 1023	paper width basic value adjustment for A4R in the multifeeder
	MF-A6R	0 to 1023	paper width basic value adjustment for A6R in the multifeeder
	MF-A4	0 to 1023	paper width basic value adjustment for A4 in the multifeeder
	C1-LVOL	0 to 1023	slice level input for the paper level detecting VR for cassette 1 (for 50 sheets)
	C1-HVOL	0 to 1023	slice level input for the paper level detecting VR for cassette 1 (for 275 sheets)
	C2-LVOL	0 to 1023	slice level input for the paper level detecting VR for cassette 2 (for 50 sheets)
	C2-HVOL	0 to 1023	slice level input for the paper level detecting VR for cassette 2 (for 275 sheets)
	C3-LVOL	0 to 1023	slice level input for the paper level detecting VR for cassette 3 (for 50 sheets)
	C3-HVOL	0 to 1023	slice level input for the paper level detecting VR for cassette 3 (for 275 sheets)
MISC	SEG-ADJ	-3 to +3	separation level adjustment between text and photo in text/photo mode or text/silver halide mode
	K-ADJ	-3 to +3	
	ATT-RTN1	0 to 1	for plain paper, addition of a rotation for attraction rotation for signal-sided copying and copying on the 1st side of a double-sided copy (full color)
	ATT-RTN2	0 to 1	for plain paper, addition of a rotation for attraction rotation for copying on the 2nd side of a double-sided copy (full color)
	ATT-RTN3	0 to 1	for thin paper, addition of a rotation for attraction rotation for signal-sided copying and copying on the 1st side of a double-sided copy (full color)
	ATT-RTN4	0 to 1	for thin paper, addition of a rotation for attraction rotation for copying on the 2nd side of a double-sided copy (full color)
	BC-ADJ	-3 to +3	adjustment of color identification range for non-pattern processing
	ACS-ADJ	0 to 1	adjustment of color recognition sensitivity for ACS

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SENS-ADJ	CLN-TH	2300 to 5500	input of thermal correction for the pre-cleaning paper sensor (PS71; in units of mV)
	CLN-TMP	0 to 60	input of a thermal correction value for the pre-cleaning paper sensor (PS71; in units of °C)
HV-SP-AC	HV-SP	-4 to +4	separation AC high-voltage output (in units of 0.5 kV)
			Environment A (A-ZONE)
	SP-L1	-4 to +4	for thin paper, separation charging AC bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	SP-L2	-4 to +4	for thin paper, separation charging AC bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	SP-N1	-4 to +4	for plain paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	SP-N2	-4 to +4	for plain paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	SP-T1	-4 to +4	for thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units 0.5 kV)
	SP-T2	-4 to +4	for thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	SP-UT1	-4 to +4	for extra thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	SP-UT2	-4 to +4	for extra thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	SP-S1-1	-4 to +4	for special paper 1, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	SP-S2-1	-4 to +4	for special paper 2, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	SP-OHP	-4 to +4	for transparencies, separation charging AC bias adjustment (in units of 0.5 kV)
	SP-POST	-4 to +4	for postcards, separation charging AC bias adjustment (in units of 0.5 kV)

Cont'd Cont'd

		Environment B (B-ZONE)
SP-L1	4 to +4	for thin paper, separation charging AC bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
SP-L2	-4 to +4	for thin paper, separation charging AC bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
SP-N1	-4 to +4	for plain paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
SP-N2	-4 to +4	for plain paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
SP-T1	-4 to +4	for thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units 0.5 kV)
SP-T2	-4 to +4	for thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
SP-UT1	-4 to +4	for extra thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
SP-UT2	-4 to +4	for extra thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
SP-S1-1	-4 to +4	for special paper 1, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
SP-S2-1	-4 to +4	for special paper 2, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
SP-OHP	-4 to +4	for transparencies, separation charging AC bias adjustment (in units of 0.5 kV)
SP-POST	-4 to +4	for postcards, separation charging AC bias adjustment (in units of 0.5 kV)

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			Environment C (C-ZONE)
	├ SP-L1	-4 to +4	for thin paper, separation charging AC bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	├ SP-L2	-4 to +4	for thin paper, separation charging AC bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	├ SP-N1	-4 to +4	for plain paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	├ SP-N2	-4 to +4	for plain paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5kV)
	├ SP-T1	-4 to +4	for thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units 0.5 kV)
	├ SP-T2	-4 to +4	for thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	├ SP-UT1	-4 to +4	for extra thick paper, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	├ SP-UT2	-4 to +4	for extra thick paper, separation charging bias adjustment for copying on the 2nd side of a double-sided copy (in units of 0.5 kV)
	├ SP-S1-1	-4 to +4	for special paper 1, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	├ SP-S2-1	-4 to +4	for special paper 2, separation charging bias adjustment for single-sided copying or copying on the 1st side of a double-sided copy (in units of 0.5 kV)
	├ SP-OHP	-4 to +4	for transparencies, separation charging AC bias adjustment (in units of 0.5 kV)
	└ SP-POST	-4 to +4	for postcards, separation charging AC bias adjustment (in units of 0.5 kV)
└ HV-PSTCL	─ HV-PSTCL	-6 to +6	adjusting the post-cleaning high-voltage output (in units of 20 μA)

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FEEDER>ADJUST Items

Level 1	Level 2	Level 3	Settings	Description
ADJUST		ADJ-RX	0 to 255	adjustment of registration in sub scanning direction with the multifeeder in use (in units of 0.1 mm)
		ADJ-RY	0 to 255	adjustment of registration in main scanning direction with the multifeeder in use (in units of 0.1 mm)
		ADJ-DX	0 to 255	adjustment of registration in sub scanning direction with the multifeeder in use in manual feed mode (in units of 0.1 mm)
		ADJ-DY	0 to 255	adjustment of registration in main scanning direction with the multifeeder in use in manual feed mode (in units of 0.1 mm)

PRJ>ADJUST Items

Level 1	Level 2	Level 3	Settings	Description
ADJUST		DS-PRJ	0 to 31	adjustment of the slice level for the projection area with the projector in use
		DS-OHP	0 to 31	adjustment of the slice level for original detection from the reference sheet position of film with the projector in use
		RD-XS	-300 to +300	adjustment of the read area with original detection OFF and with the projector in use (in units of 0.06 mm; standard: 0)
		RD-XE	-300 to +300	adjustment of the read area with original detection OFF and with the projector in use (in units of 0.06 mm; standard: 0)
		RD-YS	-300 to +300	adjustment of the read area with original detection OFF and with the projector in use (in units of 0.06 mm; standard: 0)
		RD-YE	-300 to +300	adjustment of the read area with original detection OFF and with the projector in use (in units of 0.06 mm; standard: 0)
		DA-XS	-99 to +99	adjustment of the read area with original detection ON and with the projector in use (in units of 0.11 mm; standard: 0)
		DA-XE	-99 to +99	adjustment of the read area with original detection ON and with the projector in use (in units of 0.11 mm; standard: 0)
		DA-YS	-99 to +99	adjustment of the read area with original detection ON and with the projector in use (in units of 0.06 mm; standard: 0)
		DA-YE	-99 to +99	adjustment of the read area with original detection ON and with the projector in use (in units of 0.06 mm; standard: 0)

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NEGA-B	-100 to +100	adjustment of the target value for shading correction when copying negative film with the projector in use (a higher setting darkens Y area)
NAGA-G	-100 to +100	adjustment of the target value for shading correction when copying negative film with the projector in use (a higher setting darkens M area)
NEGA-R	-100 to +100	adjustment of the target value for shading correction when copying negative film with the projector in use (a higher setting darkens C area)
POSI-B	-100 to +100	adjustment of the target value for shading correction when copying positive film with the projector in use (a higher setting darkens Y area)
POSI-G	-100 to +100	adjustment of the target value for shading correction when copying positive film with the projector in use (a higher setting darkens M area)
POSI-R	-100 to +100	adjustment of the target value for shading correction when copying positive film with the projector in use (a higher setting darkens C area)
N-LMT	0 to 255	change of the limit for the projector lamp in negative normal mode with the projector in use
N-G-LMT	0 to 255	change of the limit for the projector lamp in negative normal mode with the projector in use
P-LMT	0 to 255	change of the limit for the projector lamp in positive normal mode with the projector in use
P-G-LMT	0 to 255	change of the limit for the projector lamp in positive normal mode with the projector in use
OHP-LMT	0 to 255	change of the limit for the projector lamp in transparency mode with the projector in use
P-DA-XS	-99 to +99	adjustment of frame erasing width for positive film with the projector in use (in units of 0.6 mm; standard: 24)
P-DA-XE	-99 to +99	adjustment of frame erasing width for positive film with the projector in use (in units of 0.6 mm; standard: 8)
P-DA-YS	-99 to +99	adjustment of frame erasing width for positive film with the projector in use (in units of 0.6 mm; standard: 32)
P-DA-YE	-99 to +99	adjustment of frame erasing width for positive film with the projector in use (in units of 0.6 mm; standard: 24)
N-DA-XS	-99 to +99	adjustment of frame erasing width for negative film with the projector in use (in units of 0.6 mm; standard: 50)

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N-DA-XE	-99 to +99	adjustment of frame erasing width for negative film with the projector in use (in units of 0.6 mm; standard: 50)
N-DA-YS	-99 to +99	adjustment of frame erasing width for negative film with the projector in use (in units of 0.6 mm; standard: 50)
N-DA-YE	-99 to +99	adjustment of frame erasing width for negative film with the projector in use (in units of 0.6 mm; standard: 50)
O-DA-XS	-99 to +99	adjustment of frame erasing width for transparencies with the projector in use (in units of 0.6 mm; standard: 24)
O-DA-XE	-99 to +99	adjustment of frame erasing width for transparencies with the projector in use (in units of 0.6 mm; standard: 8)
O-DA-YS	-99 to +99	adjustment of frame erasing width for transparencies with the projector in use (in units of 0.6 mm; standard: 32)
O-DA-YE	-99 to +99	adjustment of frame erasing width for transparencies with the projector in use (in units of 0.6 mm; standard: 24)
CHNGR-X	-99 to +99	adjustment of position in main scanning direction with the rotary changer of the projector in use (in units of 0.6 mm; standard: 0)
CHNGR-Y	-99 to +99	adjustment of position in sub scanning direction with the rotary changer of the projector in use (in units of 0.6 mm; standard: 0)

EDITOR>ADJUST Items

Level 1	Level 2	Level 3	Settings	Description
ADJUST		ED-X	-99 to +99	adjustment of input coordinates in editor sub scanning (X) direction (in units of about 0.13 mm; standard: 0)
		ED-Y	-99 to +99	adjustment of input coordinates in editor main scanning (Y) direction (in units of about 0.13 mm; standard: 0)
		LOOP-MB	0 to 3	adjustment of processing used when reading images into memory for coloring in area select/color create mode (standard: 0; a higher setting makes filling of gaps easier)
		LOOP-TH	0 to 255	adjustment of the binary slice level used when reading images into memory for coloring in area select/color create mode (standard: 192; a higher setting enables reading of fine lines)
		MRK-MB	0 to 3	adjustment of processing used when reading images into memory for marking/pointing (standard: 0; a higher setting makes filling of gaps easier)
		MRK-TH	0 to 255	adjustment of the binary slice level used when reading images into memory for marking/pointing (standard: 128; a higher setting enables reading of fine lines)

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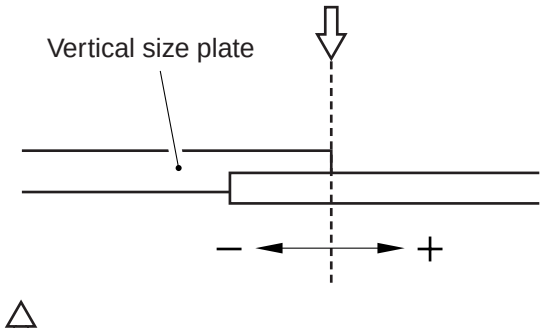
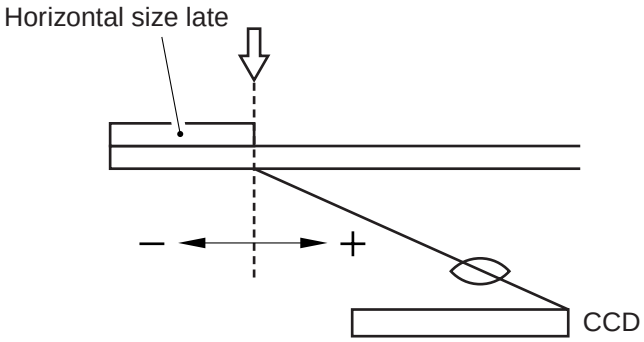
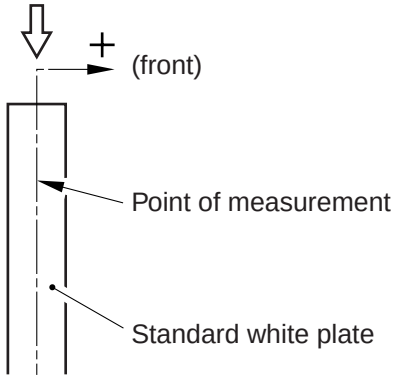
ADJ-XY

COPIER>ADJUST

Indicates the image read start position.

Level 3	Description	Remarks
ADJ-X (Note 1)	Use it to make adjustments so that the image read position matches the reference point on the copyboard glass. Fine-adjusts the distance between the original scanner HP sensor to the read start position. · Unit: number of steps from the stepping motor · Make adjustments as shown in the next page. 	-200 to +200 (-3.9 to +3.9 mm) Unit: about 0.107 mm
ADJ-Y (Note 1)	Fine-adjusts the CCD reading start position. · Unit: pixels · Make adjustments as shown in the next page. 	-100 to +100 (-2.5 to +2.5 mm) Unit: about 0.06 mm

Level 3	Description	Remarks
ADJ-S (Note 1)	Use it to fine-adjust the position at which data is collected for shading correction from the standard white plate. · Unit: number of steps from the stepping motor · Scratches or dirt on the standard plate can cause vertical white lines on copies. To correct the problem, shift the point of measurement using this item.  	0 to 45 (0 to 4.8 mm) Unit: about 0.107 mm
ADJ-J (Note 1)	Use it to adjust the period of acceleration for the original scanner motor.	0 to +190 Unit: about 0.1 msec

Note: Execute this mode upon replacement of a PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

Adjusting the Image Read Start Position

Be sure to check the present point of attraction before starting the work.

1) Turn off the original detection mechanism before starting service mode.
2) Bring up the ADJ-XY screen, and press the Copy Start key.
   · Appropriate copying mode will automatically be set, and a copy is made with a shift of about 50 mm as shown.
3) If any part of the image is missing, decrease the setting of ADJ-X, ADJ-Y.
4) If an area outside the image is copied, increase the setting of ADJ-X, ADJ-Y.

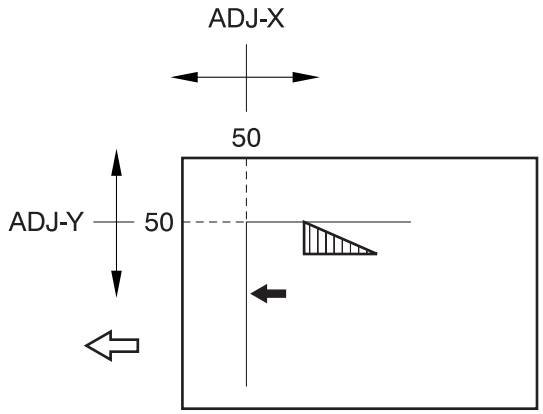


Figure 13-715

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LASER COPIER>ADJUST

Adjusts the laser system.

Level 3	Description	Remarks
T-V00	Use it to enter the laser control initial value at V00 for text mode (800 lines) as upon replacement of the laser unit.	0 to 255
T-VFF	Use it to enter the laser control initial value at VFF for text mode (800 lines) as upon replacement of the laser unit.	
P3-V00	Use it to enter the laser control initial value at V00 for photo mode (400 lines) as upon replacement of the laser unit.	
P3-VFF-1	Use it to enter the laser control initial value at VFF (45%) for photo mode (400 lines) as upon replacement of the laser unit.	
P3-VFF-2	Use it to enter the laser control initial value at VFF (55%) for photo mode (400 lines) as upon replacement of the laser unit.	
P3-VFF-3	Use it to enter the laser control initial value at VFF (65%) for photo mode (400 lines) as upon replacement of the laser unit.	
P3-VFF-4	Use it to enter the laser control initial value at VFF (70%) for photo mode (400 lines) as upon replacement of the laser unit.	
POWER	Use it to turn on the laser output when adjusting the laser power.	Press the OK key to start and the Stop key to stop.
T-V00-ON	Use it to turn on the laser output when checking T-V00.	
T-VFF-ON	Use it to turn on the laser output when checking T-VFF.	
P3V00-ON	Use it to turn on the laser output when checking P3-V00.	
P3-V1-ON	Use it to turn on the laser output when checking P3-VFF-1.	
P3-V2-ON	Use it to turn on the laser output when checking P3-VFF-2.	
P3-V3-ON	Use it to turn on the laser output when checking P3-VFF-3.	
P3-V4-ON	Use it to turn on the laser output when checking P3-VFF-4.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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DENS COPIER>ADJUST

Adjusts items related to developer concentration.

Level 3	Description	Remarks
SGNL-Y SGNL-M SGNL-C (Note 1)	Use it to adjust the toner concentration signal value of each color during INIT for ATR control.	0 to 1023
REF-Y REF-M REF-C (Note 1)	Use it to adjust the toner concentration reference signal value for each color during INIT for ATR control.	0 to 1023
SIGG-Y SIGG-M SIGG-C (Note 1)	Use it to adjust the toner concentration reference signal gain value for each color during ATR control.	0 to 255
RGAIN-K (Note 1)	Use it to adjust the toner concentration reference signal gain value for Bk during toner concentration control.	0 to 255
D-Y-TRGT D-M-TRGT D-C-TRGT (Note 1)	Use it to adjust the toner concentration target initial value of each color during ATR control.	0 to 1023
PTOFST-Y PTOFST-M PTOFST-C PTOFST-K (Note 1)	Use it to adjust the correction value (%) of the laser output of each color during ATR control.	-127 to +128
D-REF-Y D-REF-M D-REF-C D-REF-K	Use it to adjust the reference signal value (during initialization) of each toner concentration sensor in relation to light reflected by the photosensitive drum.	0 to 1023
D-REF-4 (Not 1)	Use it to adjust the reference signal value (during initialization) of the toner concentration sensor for all colors in relation to light reflected by the photosensitive drum.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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Level 3	Description	Remarks
D-SGNL-Y D-SGNL-M D-SGNL-C D-SGNL-K	Use it to adjust the signal value (during initialization) for the toner concentration sensor of each color in relation to light reflected by the photosensitive drum.	0 to 1023
D-SGNL-4 (Note 1)	Use it to adjust the signal value (during initialization) for the toner concentration sensor of all colors in relation to light reflected by the photosensitive drum.	
P-REF-Y P-REF-M P-REF-C P-REF-K (Note 1)	Use it to adjust the toner concentration reference signal value for each color on the photosensitive drum during INIT for ATR control.	0 to 1023
P-SGNL-Y P-SGNL-M P-SGNL-C P-SGNL-K (Note 1)	Use it to adjust the toner concentration reference signal value for each color on the photosensitive drum during INIT for ATR control.	0 to 1023
SIGG-K (Note 1)	Use it to adjust the gain for the Bk toner concentration reference signal during ATR control.	0 to 255
SIGG-P-M SIGG-P-C SIGG-P-Y SIGG-P-K (Note 1)	correction of the patch gain for ATR control when INIT-x (mono INIT) is executed	0 to 255
RGAN-P-M RGAN-P-C RGAN-P-Y RGAN-P-K (Note 1)	correction of the patch gain for toner density control when INIT-x (mono INIT) is executed	0 to 255

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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V-CONT

COPIER>ADJUST

Adjusts the photosensitive drum surface potential contrast.

Level 3	Description	Remarks
VBACK-Y VBACK-M VBACK-C VBACK-K	Use it to adjust the de-fogging potential for each color.	-4 to +4 Standard: 0 + side: darkens - side: lightens
EPOTOFST	Use it to adjust the potential offset value.	0 to 1023 Standard: 0
PF-CRT-Y PF-CRT-M PF-CRT-C PF-CRT-K	Use it to adjust the offset value (%) of laser strength for each color.	-25 to +25

PASCAL

Adjusts automatic gradation correction.

Level 3	Description	Remarks
OFST-P-Y OFST-P-M OFST-P-C OFST-P-K	Use it to adjust the target value of each color in high-density areas during auto gradation correction.	-127 to +128

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COLOR COPIER>ADJUST

Adjusts the color balance.

Level 3	Description	Remarks
ADJ-Y ADJ-M ADJ-C ADJ-K (Note 1)	Use it to correct the color balance of each color selected by the user. · Be sure to set the user color balance to '0' before using this item. · Be sure to follow the Image Adjustment Basic Procedure.	-8 to +8 Standard: M=0, C=0, Y=0, K=0 + side: darkens - side: lightens
OFST-Y OFST-M OFST-C OFST-K (Note 1)	Use it to adjust the color balance and density of light areas of each color. · Be sure to follow the Image Adjustment Basic Procedure. · To increase the degree of reproduction of extremely light areas, decrease the setting.	-16 to +16 Standard: M=0, C=0, Y=0, K=0
P-ADJ-Y P-ADJ-M P-ADJ-C P-ADJ-K (Note 1)	Use it to correct the color balance of each color when output is from an external image controller. · Be sure to set the user color balance to '0' before using this mode. · Be sure to follow the Image Adjustment Basic Procedure.	-8 to +8 Standard: M=0, C=0, Y=0, K=0 + side: darkens - side: lightens
P-OFST-Y P-OFST-M P-OFST-C P-OFST-K (Note 1)	Use it to adjust the color balance and the density of light areas of each color when the output is from an external image controller. · Be sure to follow the Image Adjustment Basic Procedure. · If fogging is noted, increase the value. · To increase the degree of reproduction of extremely light areas, decrease the setting.	-16 to +16 Standard M=0, C=0, Y=0, K=0

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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HV-TR COPIER>ADJUST

Adjusts the transfer high-voltage output by condition.

Level 3	Description	Remarks
HV-TR	Use it to adjust the transfer high-voltage output.	-4 to +4 Unit: 1.0 µA
TR-L1	Use it to adjust the transfer charging bias for single-sided copying and when copying on the 1st side of a double-sided copy using thin paper.	-4 to +4 Unit: 1.0 µA The copier may be adapted to the site of installation (temperature, humidity) by changing its various settings. For this mode, you will find settings grouped into three zones (A, B, C). On the Level 3 item screen (page 1), be sure to adjust Level 3 items of the appropriate zones (TEMP, ABS-HUM). Division by Moisture Content Zone A: 0 to 6.17 g Zone B: 6.18 to 18.40 g Zone C: 18.41 g or more
TR-L2	Use it to adjust the transfer charging bias when copying on the 2nd side of a double-sided copy using thin paper.	
TR-N1	Use it to adjust the transfer charging bias for single-sided copying and copying on the 1st side of a double-sided copy using plain paper.	
TR-N2	Use it to adjust the transfer charging bias for copying on the 2nd side of a double-sided copy using plain paper.	
TR-T1	Use it to adjust the transfer charging bias for one-sided copying and when copying on the 1st side of a double-sided copy using thick paper.	
TR-T2	Use it to adjust the transfer charging bias when copying on the 2nd side of a double-sided copy using thick paper.	
TR-UT1	Use it to adjust the transfer charging bias for single-sided copying and when copying on the 1st side of a double-sided copying using extra thick paper.	
TR-UT2	Use it to adjust the transfer charging bias when copying on the 2nd side of a double-sided copy using extra thick paper.	
TR-S1-1	Use it to adjust the transfer charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 1.	
TR-S2-1	Use it to adjust the transfer charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 2.	
TR-OHP	Use it to adjust the transfer charging bias when using transparencies.	
TR-POST	Use it to adjust the transfer charging bias when using postcards.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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HV-SP COPIER>ADJUST

Adjusts the separation charging high-voltage output by condition.

Level 3	Description	Remarks
HV-SP	Use it to adjust the separation DC high-voltage output.	-6 to 0 Unit: 50 µA
SP-L1	Use it to adjust the separation charging bias for single-sided copying and when copying on the 1st side of a double-sided copy using thin paper.	-6 to 0 Unit: 50 µA The copier may be adapted to the site of installation (temperature, humidity) by changing its various settings. For this mode, you will find settings grouped into three zones (A, B, C). On the Level 3 item screen (page 1), be sure to adjust Level 3 items of the appropriate zones (TEMP, ABS-HUM). Division by Moisture Content Zone A: 0 to 6.17 g Zone B: 6.18 to 18.40 g Zone C: 18.41 g or more
SP-L2	Use it to adjust the separation charging bias when copying on the 2nd side of a double-sided copy using thin paper.	
SP-N1	Use it to adjust the separation charging bias for single-sided copying and copying on the 1st side of a double-sided copy using plain paper.	
SP-N2	Use it to adjust the separation charging bias for copying on the 2nd side of a double-sided copy using plain paper.	
SP-T1	Use it to adjust the separation charging bias for one-sided copying and when copying on the 1st side of a double-sided copy using thick paper.	
SP-T2	Use it to adjust the separation charging bias when copying on the 2nd side of a double-sided copy using thick paper.	
SP-UT1	Use it to adjust the separation charging bias for single-sided copying and when copying on the 1st side of a double-sided copying using extra thick paper.	
SP-UT2	Use it to adjust the separation charging bias when copying on the 2nd side of a double-sided copy using extra thick paper.	
SP-S1-1	Use it to adjust the separation charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 1.	
SP-S2-1	Use it to adjust the separation charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 2.	
SP-OHP	Use it to adjust the separation charging bias when using transparencies.	
SP-POST	Use it to adjust the separation charging bias when using postcards.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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COPIER>ADJUST

Level 3	Description	Remarks
SP-ON-N1	Use it to adjust the separation re-charging ON environment adjustment value for single-sided copying and copying on the 1st side of a double-sided copy.	1 to 32 In this mode, the blue offset is decreased; check the setting of COPIER>ANALOG-ABS-HUM, and enter the appropriate value (1 through 32) from below. 1: all environment OFF 2: 3.03 g or less 3: 3.42 g or less 4: 3.81 g or less 5: 4.21 g or less 6: 4.60 g or less 7: 4.99 g or less 8: 5.38 g or less 9: 5.77 g or less 10: 6.17 g or less 11: 6.65 g or less 12: 7.13 g or less 13: 7.61 g or less 14: 8.09 g or less 15: 8.57 g or less 16: 9.05 g or less 17: 9.53 g or less 18: 10.01 g or less 19: 10.50 g or less 20: 11.44 g or less 21: 12.38 g or less 22: 13.32 g or less 23: 14.26 g or less 24: 15.20 g or less 25: 16.00 g or less 26: 16.80 g or less 27: 17.60 g or less 28: 18.40 g or less 29: 19.20 g or less 30: 20.00 g or less 31: 20.80 g or less 32: 21.60 g or less For instance, in the case of 5 g, enter '8' for the paper type in question so that the separation re-charging mechanism will turn on when the moisture content is 0 to 5.38 g.
SP-ON-N2	Use it to adjust the separation re-charging ON environment adjustment value for copying on the 2nd side of a double-sided copy using plain paper.	
SP-ON-L1	Use it to adjust the separation re-charging on environment adjustment value for single-sided copying or copying on the 1st side of a double-sided copy using thin paper.	
SP-CN-L2	Use it to adjust the separation re-charging on environment adjustment value for copying on the 2nd side of a double-sided copy using thin paper.	
SP-ON-T1	Use it to adjust the separation re-charging on environment adjustment value for single-sided copying and copying on the 1st side of a double-sided copy using thick paper.	
SP-ON-T2	Use it to adjust the separation re-charging on environment adjustment value for copying on the 2nd side of a double-sided copy using thick paper.	
SP-ONUT1	Use it to adjust the separation re-charging on environment adjustment value for single-sided copying and copying on the 1st side of a double-sided copy using extra thick paper.	
SP-ONUT2	Use it to adjust the separation re-charging on environment adjustment value for copying on the 2nd side of a double-sided copy using extra thick paper.	
SP-ON-S1	Use it to adjust the separation re-charging on environment adjustment value for single-sided copying and copying on the 1st side of a double-sided copy using special paper 1.	
SP-ON-S2	Use it to adjust the separation re-charging on environment adjustment value for single-sided copying and copying on the 1st side of a double-sided copy using special paper 2.	
SP-ONOHP	Use it to adjust the separation re-charging on environment adjustment value using transparencies.	
SP-ON-PT	Use it to adjust the separation re-charging on environment adjustment value using postcards.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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HV-IEL COPIER>ADJUST

Adjusts the internal static eliminating high-voltage output by condition.

Level 3	Description	Remarks
HV-IEL	Use it to adjust the internal static eliminating high-voltage output.	-8 to 0 Unit: 0.5 kV
IEL-L1	Use it to adjust the internal static eliminating bias for single-sided copying and when copying on the 1st side of a double-sided copy using thin paper.	-8 to 0 Unit: 0.5 kV The copier may be adapted to the site of installation (temperature, humidity) by changing its various settings. For this mode, you will find settings grouped into three zones (A, B, C). On the Level 3 item screen (page 1), be sure to adjust Level 3 items of the appropriate zones (TEMP, ABS-HUM). Division by Moisture Content Zone A: 0 to 6.17 g Zone B: 6.18 to 18.40 g Zone C: 18.41 g or more
IEL-L2	Use it to adjust the internal static eliminating bias when copying on the 2nd side of a double-sided copy using thin paper.	
IEL-N1	Use it to adjust the internal static eliminating bias for single-sided copying and copying on the 1st side of a double-sided copy using plain paper.	
IEL-N2	Use it to adjust the internal static eliminating bias for copying on the 2nd side of a double-sided copy using plain paper.	
IEL-T1	Use it to adjust the internal static eliminating bias for one-sided copying and when copying on the 1st side of a double-sided copy using thick paper.	
IEL-T2	Use it to adjust the internal static eliminating bias when copying on the 2nd side of a double-sided copy using thick paper.	
IEL-UT1	Use it to adjust the internal static eliminating bias for single-sided copying and when copying on the 1st side of a double-sided copy using extra thick paper.	
IEL-UT2	Use it to adjust the internal static eliminating bias when copying on the 2nd side of a double-sided copy using extra thick paper.	
IEL-S1-1	Use it to adjust the internal static eliminating bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 1.	
IEL-S2-1	Use it to adjust the internal static eliminating bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 2.	
IEL-OHP	Use it to adjust the internal static eliminating bias when using transparencies.	
IEL-POST	Use it to adjust the internal static eliminating bias when using postcards.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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HV-ATT COPIER>ADJUST

Adjusts the attraction charging high-voltage output by condition.

Level 3	Description	Remarks
HV-ATT	Use it to adjust the attraction high-voltage output.	-5 to +5 Unit: 2 µA
ATT-L1	Use it to adjust the attraction charging bias for single-sided copying and when copying on the 1st side of a double-sided copy using thin paper.	-5 to +5 Unit: 2 µA The copier may be adapted to the site of installation (temperature, humidity) by changing its various settings. For this mode, you will find settings grouped into three zones (A, B, C). On the Level 3 item screen (page 1), be sure to adjust Level 3 items of the appropriate zones (TEMP, ABS-HUM). Division by Moisture Content Zone A: 0 to 6.17 g Zone B: 6.18 to 18.40 g Zone C: 18.41 g or more
ATT-L2	Use it to adjust the attraction charging bias when copying on the 2nd side of a double-sided copy using thin paper.	
ATT-N1	Use it to adjust the attraction charging bias for single-sided copying and copying on the 1st side of a double-sided copy using plain paper.	
ATT-N2	Use it to adjust the attraction charging bias for copying on the 2nd side of a double-sided copy using plain paper.	
ATT-T1	Use it to adjust the attraction charging bias for one-sided copying and when copying on the 1st side of a double-sided copy using thick paper.	
ATT-T2	Use it to adjust the attraction charging bias when copying on the 2nd side of a double-sided copy using thick paper.	
ATT-S1	Use it to adjust the attraction charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 1.	
ATT-S2	Use it to adjust the attraction charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 2.	
ATT-OHP	Use it to adjust the attraction charging bias when using transparencies.	
ATT-UT1	Use it to adjust the attraction charging bias for single-sided copying and when copying on the 1st side of a double-sided copy using extra thick paper.	
ATT-UT2	Use it to adjust the attraction charging bias when copying on the 2nd side of a double-sided copy using extra thick paper.	
ATT-POST	Use it to adjust the attraction charging bias when using postcards.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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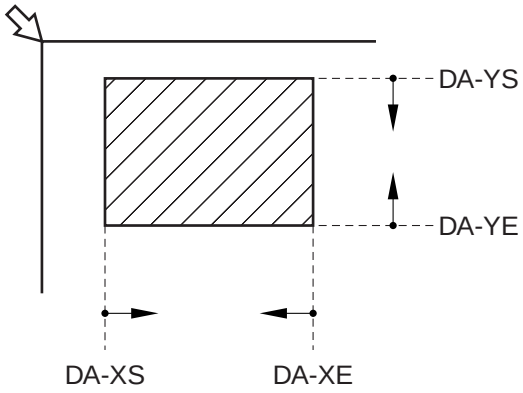
DOC-REC COPIER>ADJUST

Adjusts the original detection area/slice level.

Level 3	Description	Remarks
DA-XS DA-XE DA-YS DA-YE (Note 1)	Fine-Adjusting the Original Detection Area If an original is placed on the copyboard glass at an angle, its copy will be framed in black by the work of original detection mode. Use this item to make settings so as to remove such frames. Keep in mind that a change in the settings will affect the frame width in original detection mode while the projector is in use.  	-99 to +99 (0 to 6.3 mm) Standard: SX=24 XE=8 YS=32 YE=24 Unit: 0.06 mm (approx.)
DS-DOC (Note 1)	Adjusting the Slice Level for Original Detection You may set a slice level of your choice for original detection. A higher slice level will increase the degree of detection of an original, but at the same time will lead to wrong detection.	0 to 31 (density level of 0 to 248) Standard: 21

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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FEED-ADJ COPIER>ADJUST

Level 3	Description	Remarks
ATT-T-A	Use it to enter a transfer drum side A attraction timing adjustment value.	-10 to +10 Unit: 0.1 mm
ATT-T-B	Use it to enter a transfer drum side B attraction timing adjustment value.	
RG-XA	Use it to enter a registration (point of attraction) fine-adjustment value for transfer drum side A sub scanning direction (feeding direction).	-47 to +47 Unit: 0.1 mm
RG-XB	Use it to enter a registration (point of attraction) fine-adjustment value for transfer drum side B sub scanning direction (feeding direction).	
RG-Y	Use it to enter a registration (point of attraction) fine-adjustment value for transfer drum main scanning direction (drum axial).	-70 to +70
TR-DLY-A	Use it to enter a fine-adjustment value for the point of attraction for transfer drum side A.	-10 to +10
TR-DLY-B	Use it to enter a fine-adjustment value for the point of attraction for transfer drum side B.	
ATT-CHK	Use it to select a point of attraction on the transfer drum during ATT-ON.	1: 2-sheet retention (sides B and A) 2: side A retention 3: side B retention
ATT-ON	Use it to execute attraction of copy paper to the transfer drum according to ATT-CHK settings.	OK key to start; auto stop
RGST-CHK	Use it to select a point of attraction on the transfer drum during RGST-ON.	1: 2-sheet retention (sides B and A) 2: side A retention 3: side B retention
RGST-ON	Use it to execute printing for checking registration (side of retention) using C according to RGST-CHK settings.	OK key to start; auto stop
TR1-CHK	Use it to select a point of attraction on the transfer drum during TR1-ON.	1: 2-sheet retention (sides B and A) 2: side A retention 3: side B retention
TR2-CHK	Use it to select a point of attraction on the transfer drum during TR2-ON.	
TR1-ON	Use it to execute printing for checking a 1-mm leading edge margin according to TR1-CHK settings.	OK key to start; auto stop
TR2-ON	Use it to execute printing for checking an 8-mm leading edge margin according to TR2-CHK settings.	
TR3-ON	Use it to execute printing for checking a trailing edge margin according to TR-END-A settings.	
TR4-ON	Use it to execute printing for checking a training edge margin according to TR-END-B.	

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Level 3	Description	Remarks
TR-END-A	Use it to adjust the falling edge (trailing edge margin) of transfer high voltage for side A retention.	0 to 25 Unit: 0.4 mm
TR-END-B	Use it to adjust the falling edge (training edge margin) of transfer high voltage for side B retention. · Be sure to make adjustments whenever you have replaced the transfer drum unit. · A lower setting will shift the point at which blurring starts toward the trailing edge.	

CST-ADJ

Adjusts cassette-/manual feed-related items.

Level 3	Description	Remarks
C2-STMTR	Use it to adjust the paper width basic value for STMTR in cassette 2.	0 to 1023 When you have replaced the CPU PCB or initialized the RAM of the DC-CPU, enter the values recorded on the service label. If you have replaced the paper width sensor, execute COPIER>FUNCTION>CST.
C2-A4R	Use it to adjust the paper width basic value for A4R in cassette 2.	
C3-STMTR	Use it to adjust the paper width basic value for STMTR in cassette 3 (for CLC1150, cassette 2).	
C3-A4R	Use it to adjust the paper width basic value for A4R in cassette 3 (for CLC1150, cassette 2).	
MF-A4R	Use it to adjust the paper width basic value for A4R in the multifeeder.	
MF-A6R	Use it to adjust the paper width basic value for A6R in the multifeeder.	
MF-A4	Use it to adjust the paper width basic value for A4 in the multifeeder.	
C1-LVOL	Use it to enter a slice level for the cassette 1 paper level detecting VR (for 50 sheets).	0 to 1023 When you have replaced the CPU PCB or initialized the RAM of the DC -CPU, enter the values recorded on the service label.
C1-HVOL	Use it to enter a slice level for the cassette 1 paper level detecting VR (for 275 sheets).	
C2-LVOL	Use it to enter a slice level for the cassette 2 (for CLC1150, cassette 1) paper level detecting VR (for 50 sheets).	
C2-HVOL	Use it to enter a slice level for the cassette 2 (for CLC1150, cassette 1), paper level detecting VR (for 275 sheets).	
C3-LVOL	Use it to enter a slice level for the cassette 3 (for CLC1150, cassette 2) paper level detecting VR (for 50 sheets).	
C3-HVOL	Use it to enter a slice level for the cassette 3 (for CLC1150, cassette 2) paper level detecting VR (for 275 sheets).	

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MISC COPIER>ADJUST

Level 3	Description	Remarks
SEG-ADJ	Use it to adjust the separation level between text and photo in text/photo mode or text/silver halide mode.	-3 to +3
K-ADJ	Use it to correct the black text mechanism.	-3 to +3
ATT-RTN1	Use it to add a single rotation to attraction rotation for single-sided copying and copying on the 1st side of double-sided copying using plain paper (full color).	0 to 1
ATT-RTN2	Use it to add a single rotation to attraction rotation for copying on the 2nd side of a double-sided copy using plain paper (full color).	
ATT-RTN3	Use it to add a single attraction rotation for single-sided copying and copying on the 1st side of a double-sided copy using thin paper (full color).	
ATT-RTN4	Use it to add a single rotation to attraction rotation for copying on the 2nd side of a double-sided copy using thin paper (full color).	
BC-ADJ	Use it to adjust the color recognition range when pattern processing is not performed.	-3 to +3 A higher setting will decrease the recognition range (i.e., a light color or a dark color will be identified as white or black, respectively).
ACS-ADJ	Use it to adjust the color recognition sensitivity for ACS.	-6 to +6

SENS-ADJ

Adjusts sensor-related items.

Level 3	Description	Remarks
CLN-TH	Use it to enter a thermal correction value for the pre-cleaning paper sensor (PS71).	2300 to 5500 Unit: mV
CLN-TMP	Use it to enter a thermal correction value for the pre-cleaning paper sensor (PS71).	0 to 60 Unit: ºC When you have replaced the CPU PCB or initialized the RAM of the DC-CPU, be sure to enter the values recorded on the service label. If you have replaced the pre-cleaning paper sensor or the photosensitive drum, or removed the sensor unit, be sure to execute COPIER>FUNCTION>SENS-ADJ>CLN-OFST after cleaning the sensor unit.

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HV-SP-AC COPIER>ADJUST

Adjusts the separation charging AC high-voltage output by condition.

Level 3	Description	Remarks
HV-SP (Note 1)	Use it to adjust the separation AC high-voltage output.	-4 to +4 Unit: 0.5 kV
SP-N1	Use it to adjust the separation charging bias for single-sided copying and copying on the 1st side of a double-sided copy using plain paper.	-4 to +4 Unit: 0.5 kV The copier may be adapted to the site of installation (temperature, humidity) by changing its various settings. For this mode, you will find settings grouped into three zones (A, B, C). On the Level 3 item screen (page 1), be sure to adjust Level 3 items of the appropriate zones (TEMP, ABS-HUM). Division by Moisture Content Zone A: 0 to 6.17 g Zone B: 6.18 to 18.40 g Zone C: 18.41 g or more
SP-N2	Use it to adjust the separation charging bias for copying on the 2nd side of a double-sided copy using plain paper.	
SP-T1	Use it to adjust the separation charging bias for one-sided copying and when copying on the 1st side of a double-sided copy using thick paper.	
SP-T2	Use it to adjust the separation charging bias when copying on the 2nd side of a double-sided copy using thick paper.	
SP-UT1	Use it to adjust the separation charging bias for single-sided copying and when copying on the 1st side of a double-sided copying using extra thick paper.	
SP-UT2	Use it to adjust the separation charging bias when copying on the 2nd side of a double-sided copy using extra thick paper.	
SP-S1-1	Use it to adjust the separation charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 1.	
SP-S2-1	Use it to adjust the separation charging bias for single-sided copying and copying on the 1st side of a double-sided copy using special paper 2.	
SP-OHP	Use it to adjust the separation charging bias when using transparencies.	
SP-POST	Use it to adjust the separation charging bias when using postcards.	
SP-L1	Use it to adjust the separation charging bias for single-sided copying and when copying on the 1st side of a double-sided copy using thin paper.	
SP-L2 (Note 1)	Use it to adjust the separation charging bias when copying on the 2nd side of a double-sided copy using thin paper.	

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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HV-PSTCL COPIER>ADJUST

Adjusts the post-cleaning high-voltage output.

Level 1	Description	Remarks
HV-PSTCL (Note 1)	Adjusting the Post-Cleaning High Voltage · Increase the setting if a width of about 5 cm along the leading edge of paper is dark when making halftone copies.	-6 to +6 Unit: 20 µA

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

Feeder-Related Items FEEDER>ADJUST

Level 3	Description	Remarks
ADJ-RX	Use it to adjust the registration in sub scanning direction with the feeder in use.	-50 to +50 Unit: 0.1 mm
ADJ-RY	Use it to adjust the registration in main scanning direction with the feeder in use.	
ADJ-DX	Use it to adjust the registration in sub scanning direction with the feeder in use in manual mode.	
ADJ-DY	Use it to adjust the registration in main scanning direction with the feeder in use in manual feed mode.	

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Projector-Related Items PRJ>ADJUST

Level 3	Description	Remarks
DS-PRJ	Use it to adjust the slice level for projection area detection with the projector in use.	0 to 31 Standard: 28
DS-OHP	Use it to adjust the slice level for original detection in reference to the reference sheet of film (e.g., 6x6, 8x10) placed on the copyboard glass with the projector in use.	0 to 31 Standard: 22
RD-XS RD-XE RD-YS RD-YE	Use it to adjust the read area when the original detection mechanism is off or when original detection fails even when the original detection mechanism is on with the projector in use.	-300 to +300 Unit: 0.06 mm Standard: 0
DA-XS DA-XE DA-YS DA-YE	Use it to adjust the read area when the original detection mechanism is on with the projector in use. · This is also used for the read area when the original detection mechanism is off in copyboard mode.	-99 to +99 Standard: 0 XS, XE Unit: 0.11 mm YS, YE Unit: 0.06 mm

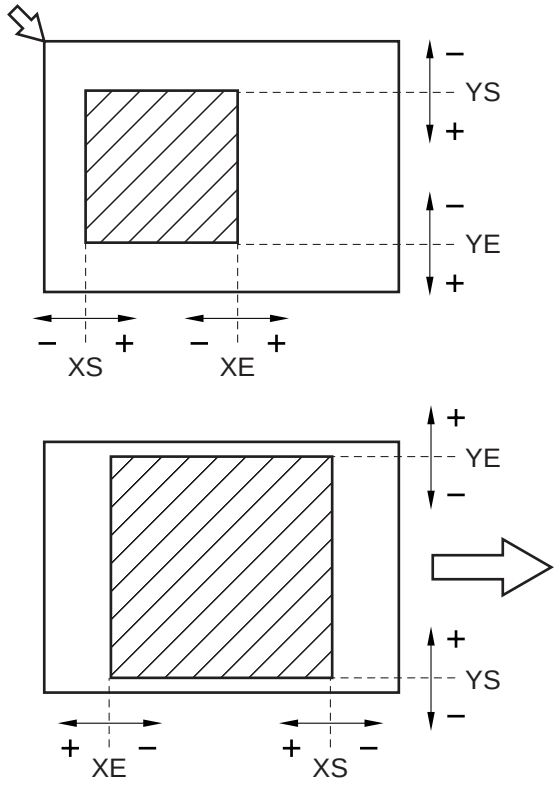

Figure 13-716

PRJ>ADJUST

Level 3	Description	Remarks
NEGA-B NEGA-G NEGA-R	Use it to adjust the target value for shading correction when copying negative film with the projector in use.	-100 to +100 A higher value darkens the color. B → Y G → M R → C
POSI-B POSI-G POSI-R	Use it to adjust the target value for shading correction when copying positive film with the projector in use.	
N-LMT	Use it to change the limit for the projector lamp in negative normal mode with the projector in use	0 to 255
N-G-LMT	Use it to change the limit for the projector lamp in negative copyboard mode with the projector in use.	
P-LMT	Use it to change the limit for the projector in positive normal mode with the projector in use.	
P-G-LMT	Use it to change the limit for the projector in positive copyboard mode with the projector in use.	
OHP-LMT	Use it to change the limit for the projector in transparency mode with the projector in use.	
P-DA-XS P-DA-XE P-DA-YS P-DA-YE	Use it to adjust the degree of the positive film original frame erasing mechanism with the projector in use.	-99 to +99 Unit: 0.6 mm (approx.) Standard: XS=24 XE=8 YS=32 YE=24
N-DA-XS N-DA-XE N-DA-YS N-DA-YE	Use it to adjust the degree of negative film original frame erasing mechanism with the projector in use.	-99 to +99 Unit: 0.6 mm (approx.) Standard: 50
O-DA-XS O-DA-XE O-DA-YS ODAS-YE	Use it to adjust the degree of transparency film original erasing mechanism with the projector in use.	-99 to +99 Unit: 0.6 mm (approx.) Standard: XS=24 XE=8 YS=32 YE=24
CHNGR-X	Use it to adjust the position in main scanning direction with the projector rotary changer in use.	-99 to +99 Unit: 0.6 mm (approx.) Standard: 0
CHNGR-Y	Use it to adjust the position in sub scanning direction with the projector rotary changer in use.	

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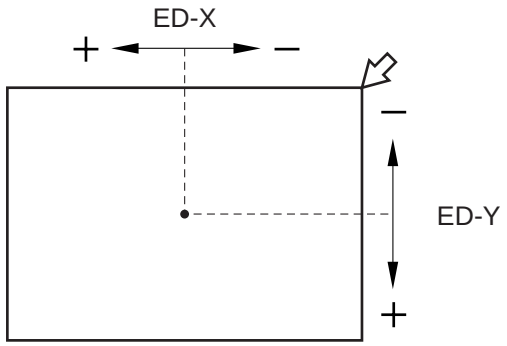
Editor-Related Items

EDITOR>ADJUST

Level 3	Description	Remarks
ED-X ED-Y (Note 1)	Use it to adjust the input coordinates in editor sub scanning (X) direction. Use it to adjust the input coordinates in editor main scanning (Y) direction. 	-99 to +99 Unit: 0.13 mm (approx.) Standard: 0
LOOP-MB (Note 1)	Use it to adjust processing for reading images into memory when coloring in area select/color create mode. · A higher setting makes filling of gaps easier, but too high a setting can lead to bleeding.	0 to 3 Standard: 0
LOOP-TH (Note 1)	Use it to adjust the binary slice level for reading images into memory when coloring in area select/color create mode. · A higher setting enables reading fine lines.	0 to 255 Standard: 192
MRK-MB	Use it to adjust processing for reading images into memory in marker select/point select mode. · A higher setting makes filling of gaps easier.	0 to 3 Standard: 0
MRK-TH	Use it to adjust the binary slice level for reading images into memory in marker select/point select mode. · A higher setting enable reading fine lines.	0 to 255 Standard: 128

Note 1: Execute this mode upon replacement of a CPU PCB or initialization of the RAM. The settings will be returned to standard settings, requiring you to enter the appropriate settings. Be sure to record any new settings on the service label.

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E. FUNCTION (operation check mode)

The COPIER>FUNCTION screen looks like the following, and it offers the items shown on the pages that follow:

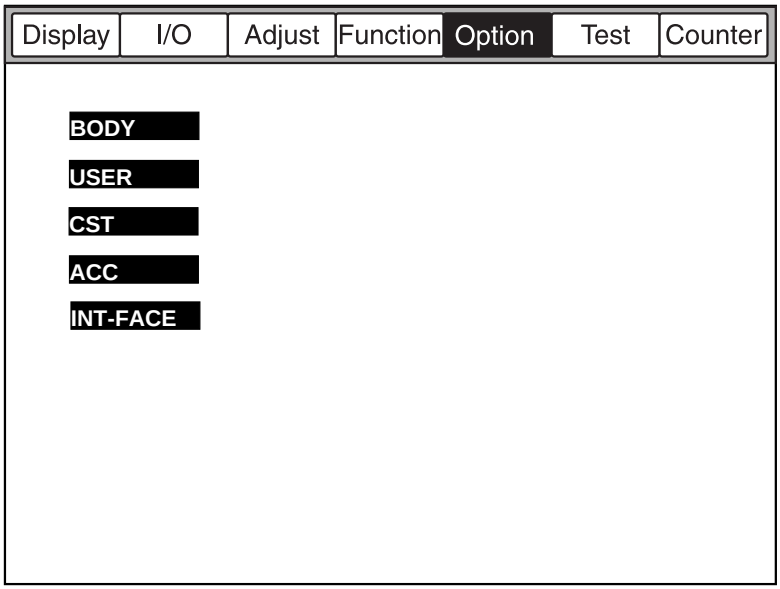

Figure 13-717

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COPIER>FUNCTION Items

Level 1	Level 2	Level 3	Description
FUNCTION	INSTALL	SPLY-Y	rotates the cylinder to supply Y developer to the developing assembly (OK key to start, Stop key to stop)
		SPLY-M	rotates the cylinder to supply M developer to the developing assembly (OK key to start, Stop key to stop)
		SPLY-C	rotates the cylinder to supply C developer to the developing assembly (OK key to start, Stop key to stop)
		SPLY-K	rotates the cylinder to supply Bk developer to the developing assembly (OK key to start, Stop key to stop)
		STIR-Y	stirs the developer inside the Y developing assembly (OK key to start; auto stop in about 2 min)
		STIR-M	stirs the developer inside the M developing assembly (OK key to start; auto stop in about 2 min)
		STIR-C	stirs the developer inside the C developing assembly (OK key to start; auto stop in about 2 min)
		STIR-K	stirs the developer inside the Bk developing assembly (OK key to start; auto stop in about 2 min)
		STIR-4	stirs the developer inside the four color developing assemblies in sequence (OK key to start; auto stop in about 9 min)
		INIT-Y	reads the initial value of the Y toner concentration signal SGNL, REF (OK key to start; auto stop)
		INIT-M	reads the initial value of the M toner concentration signal SGNL, REF (OK key to start; auto stop)
		INIT-C	reads the initial value of the C toner concentration signal SGNL, REF (OK key to start; auto stop)
		INIT-K	reads the initial value of the Bk toner concentration signal SGNL, REF (OK key to start; auto stop)
		INIT-4	reads the initial values of the 4 color toner concentration signals SGNL, REF in sequence (OK key to start; auto stop)
		RECV-Y	rotates the cylinder to draw the developer from the Y developing assembly (OK key to start; Stop key to stop)
		RECV-M	rotates the cylinder to draw the developer from the M developing assembly (OK key to start; Stop key to stop)
		RECV-C	rotates the cylinder to draw the developer from the C developing assembly (OK key to start; Stop key to stop)
		RECV-K	rotates the cylinder to draw the developer from the Bk developing assembly (OK key to start; Stop key to stop)
		HP-STR-Y	stirs the toner inside the Y hopper at time of installation (OK key to start; auto stop)

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	HP-STR-M		stirs the toner inside the M hopper at time of installation (OK key to start; auto stop)
	HP-STR-C		stirs the toner inside the C hopper at time of installation (OK key to start; auto stop)
	HP-STR-K		stirs the toner inside the Bk hopper at time of installation (OK key to start; auto stop)
	HP-STR-4		stirs the toner inside the four color hoppers at time of installation (OK key to start; auto stop)
	INIT-D		reads black toner concentration sensor output data once again (OK key to start; auto stop)
	INIT-P		for R&D
CCD	CCD-ADJ		executes shading correction using the standard white plate (OK key to start; auto stop, indicating END for normal and ERR for error)
LASER	POWER	---	turns on the laser output for laser power adjustment (OK key to start; Stop key to stop)
	T-V00-ON	---	turns on the laser for checking T-V00 (OK key to start; Stop key to stop)
	T-VFF-ON	---	turns on the laser for checking T-VFF (OK key to start; Stop key to stop)
	P3V00-ON	---	turns on the laser for checking P3-V00 (OK key to start; Stop key to stop)
	P3-V1-ON	---	turns on the laser for checking P3-VFF-1 (OK key to start; Stop key to stop)
	P3-V2-ON	---	turns on the laser for checking P3-VFF-2 (OK key to start; Stop key to stop)
	P3-V3-ON	---	turns on the laser for checking P3-VFF-3 (OK key to start; Stop key to stop)
	P3-V4-ON	---	turns on the laser for checking P3-VFF-4 (OK key to start; Stop key to stop)
ATTRACT	ATT-CHK		selects a point of attraction on the transfer during ATT-ON (1: 2-sheet retention of sides B and A; 2: side A retention; 3: side B retention)
	ATT-ON		executes attraction of copy paper to the transfer drum according to ATT-CHK settings (OK key to start; auto stop)
	RGST-CHK		selects a point of attraction on the transfer during RGST-ON (1: 2-sheet retention of sides B and A; 2: side A retention; 3: side B retention)
	RGST-ON		executes printing for checking the point of registration (side of attraction) using C according to RGST-CHK settings (OK key to start; auto stop)
	TR1-CHK		selects a point of attraction on the transfer drum during TR1-ON (1: 2-sheet retention of sides B and A; 2: side A retention; 3: side B retention)
	TR1-ON		executes printing for checking a 1-mm leading edge margin according to TR1-CHK settings (1: 2-sheet retention of sides B and A; 2: side A retention; 3: side B retention)
	TR2-CHK		selects a point of attraction on the transfer drum during TR2-ON (1: 2-sheet retention of sides B and A; 2: side A retention; 3: side B retention)

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	TR2-ON	executes printing for checking an 8-mm leading edge margin according to TR2-CHK settings (OK key to start; auto stop)
DPC	DPC	executes measurement of potential on the photosensitive drum (OK key to start; auto stop)
	OFST	executes offset adjustment of the potential measurement circuit of the photosensitive drum (OK key to start; auto stop)
	INIT	executes initialization of the photosensitive drum potential measurement data (OK key to start; auto stop)
CST	C2-STMTR	stores paper width detection reference point 1 for STMTR paper in cassette 2 (OK key to start; auto stop)
	C2-A4R	stores paper width detection reference point 2 for A4R paper in cassette 2 (OK key to start; auto stop)
	C3-STMTR	stores paper width detection reference point 1 for STMTR paper in cassette 3 (OK key to start; auto stop)
	C3-A4R	stores paper width detection reference point 2 for A4R paper in cassette 3 (OK key to start; auto stop)
	MF-A4R	stores paper width detection reference point 1 for A4R paper in multifeeder (OK key to start; auto stop)
	MF-A6R	stores paper width detection reference point 2 for A6R paper in multifeeder (OK key to start; auto stop)
	MF-A4	stores paper width detection reference point 3 for A4 paper in multifeeder (OK key to start; auto stop)
CLEANING	KCLN	rotates the polishing roller while rotating the transfer drum (OK key to start and rotate for about 3 min; auto stop)
FIXING	NIP-CHK	generates output for measuring the fixing nip with (OK key to start; cyan image output generated and delivered automatically)
	PUMP-ON	turns on the fixing oil pump (OK key to start; Stop key to stop)
PANEL	LCD-CHK	checks the LCD for missing dots (OK key to start; all dots turned on, and changed to blue; Stop key to stop)
	LED-CHK	starts a check on the LEDs on the control panel (OK key to start; LEDs turned on in sequence)
	LED-OFF	ends a check on the LEDs on the control panel
	KEY-CHK	starts a check on key inputs from the control panel (press on highlighted item to end)
	TOUCHCHK	checks the touch panel of the control panel (+ indicated on LCD pressed repeatedly to move through highlighted items)
PART-CHK	CL	selects each clutch (enter parts No., and press OK key to select)
	CL-ON	starts the operation of the clutch selected by 'CL' (OK key to start; Stop key to stop)
	FAN	selects each key (enter part No., and press OK key to select)
	FAN-ON	starts the operation of the fan selected by 'FAN' (OK key to start; stop key to stop)

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	MTR	selects each motor (enter the part No., and press the OK key to select)
	MTR-ON	starts the operation of the motor selected in 'MTR' (OK key to start; auto stop in 20 sec)
	SL	selects each solenoid (enter part No., and press OK key to select)
	SL-ON	starts the operation of the solenoid selected in 'SL' (OK key to start; Stop key to stop)
	SHV	selects each high-voltage output (enter high-voltage No., and press OK to select)
	SHV-ON	starts operation of the high-voltage output selected in 'SHV' (OK key to start; auto stop)
CLEAR	ERR	clears an error code (E000, E004, E005, E008, E020, E717; OK key to start; turn off and then on power switch)
	DC-CON	initializes the RAM of the DC-CPU (OK key to start)
	R-CON	initializes the RAM of the R-CPU (OK key to start)
	MMI-COPY	initializes the RAM of the PANEL-CPU (OK key to start)
	SERVICE	initializes the backup data of service mode (OK key to start)
	JAM-HIST	clears the jam history (OK key to start)
	ERR-HIST	clears the error history (OK key to start)
	E354-CLR	-
	E355-CLR	-
MISC-R	SCANLAMP	turns on the scanning lamp (OK key to start; auto stop after several sec)
	SC-MOVE	starts scanner movement (OK key to start; 1: HP to A, 2: HP to B, 3: HP to C, 4: HP)
	RESERVE1	for R&D
	RESERVE2	for R&D
	RESERVE3	for R&D
	RESERVE4	for R&D
MISC-P	DRUM-ROT	rotates the photosensitive drum to rotate idly for a specific period of time (OK key to start; auto stop)
	POWEROFF	executes a check on the operation of auto power-off (OK key to start)
	B-HP	rotates the attraction/transfer locking cam motor to move the cam to HP (OK key to start; auto stop)
	B-ATT-TR	rotates the attraction/transfer locking cam motor to move the cam to the attraction/transfer position (OK key to start; auto stop)
	B-TR	rotates the attraction/transfer locking cam motor to move the cam to the transfer position (OK key to start; auto stop)
	B-CLN	rotates the attraction/transfer locking cam motor to move the cam to the transfer drum cleaning position (OK key to start; auto stop)
SENS-ADJ	CLN-OFST	starts thermal correction operation of the pre-cleaning paper sensor (PS72; OK key to start; auto stop)

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PRJ>FUNCTION Items

Level 1	Level 2	Level 3	Description
FUNCTION		LAMP	drives the projector lamp for a specific period of time (OK key to start; auto stop)
		CCD	reads in data and executes gain adjustment at time of projector installation (OK key to start; auto stop)

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INSTALL COPIER>FUNCTION

Used at time of installation.

Level 3	Description	Remarks
SPLY-Y SPLY-M SPLY-C SPLY-K	Use it to rotate the developing cylinder to supply a specific color developer to the developing assembly. Using the Item 1) Select an item (to highlight), and press the OK key. 2) To stop, press the Stop key.	
STIR-Y STIR-M STIR-C STIR-K	Use it to stir the developer inside a specific color developing assembly. Using the Item 1) Select an item (to highlight), and press the OK key. 2) The operation will stop automatically in about 2 min.	
STIR-4	Use it to stir the developer in the four developing assemblies in sequence. 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically in about 9 min.	
INIT-Y INIT-M INIT-C INIT-K	Use it to read the initial value of a specific toner concentration signal SGNL, REF. · The screen (COPIER>ADJUST>DENS) will show the reading. Be sure to record it on the service label. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically in about 2 min.	
INIT-4	Use it to read the initial value of the four color toner concentration signals SGNL, REF in sequence. · The screen (COPIER>ADJUST>DENS) will show the readings. Be sure to record them on the service label. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically in about 9 min.	
RECV-Y RECV-M RECV-C RECV-K	Use it to rotate the developing cylinder, thereby drawing the developer from a specific color developing assembly. Using the Item 1) Select an item (to highlight), and press the OK key. 2) To stop, press the stop key. **Note:** You will use this mode during installation.	

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Level 3	Description	Remarks
HP-STR-Y HP-STR-M HP-STR-C HP-STR-K	Use it to stir the toner inside a specific color hopper to prevent blocking at time of installation and hopper unit replacement. Using the Item 1) Select an item (to highlight), and press the OK key. 2) The operation will stop automatically in about 30 sec. **Note:** This item is designed to prevent blocking of toner supplied to an empty hopper at high speed, as occurring at time of installation or hopper unit replacement.	
HP-STR-4	Use it to stir the toner inside the four color hoppers to prevent blocking at time of installation or hopper unit replacement. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically in about 2 min. **Caution:** This item is designed to prevent blocking of toner supplied to empty hoppers at high speed, as occurring at time of installation or hopper unit replacement.	
INIT-D	Use it to read the concentration sensor output data once again after cleaning the black toner concentration sensor to suit the light reflected by the photosensitive drum. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically.	
INIT-P	for R&D	

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CCD COPIER>FUNCTION

Executes automatic adjustment of CCD-/shading-related items.

Level 3	Description	Remarks
CCD-ADJ	Use it to execute shading correction using the standard white plate. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically, and the result will be indicated. **Caution:** Do not open the front cover while executing this mode. Otherwise, the CCD adjustment may fail.	END: normal ERR: error* *Try executing the item once again. Execute this item if you have replaced the CCD unit, scanning lamp, image processor, or the standard white plate.

LASER

Adjusts laser-related items.

Level 3	Description	Remarks
POWER	Use it to turn on the laser output for adjusting the laser power.	OK key to start; Stop key to stop
T-V00-ON	Use it to turn on the laser output when checking T-V00.	
T-VFF-ON	Use it to turn on the laser output when checking T-VFF.	
P3V00-ON	Use it to turn on the laser output when checking P3-V00.	
P3-V1-ON	Use it to turn on the laser output when checking P3-VFF-1.	
P3-V2-ON	Use it to turn on the laser output when checking P3-VFF-2.	
P3-V3-ON	Use it to turn on the laser output when checking P3-VFF-3.	
P3-V4-ON	Use it to turn on the laser output when checking P3-VFF-4.	

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ATTRACT COPIER>FUNCTION

Executes attraction point auto adjustment.

Level 3	Description	Remarks
ATT-CHK	Use it to select a point of attraction on the transfer drum during ATT-ON. 1: 2-sheet retention (sides B and A) 2: side A retention 3: side B retention	
ATT-ON	Use it to execute attraction of copy paper to the transfer drum according to ATT-CHK settings. This item uses the source of paper selected before starting service mode. Using the Item 1) Select an item (to highlight), and press the OK key. 2) The operation will stop automatically.	
RGST-CHK	Use it to select the point of attraction on the transfer drum during RGST-ON. 1: 2-sheet retention (sides B and A) 2: side A detecting 3: side B retention	
RGST-ON	Use it to execute printing for checking the point of registration (side of attraction) using C according to RGST-CHK settings. This mode uses the source of paper selected before starting service mode. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically.	
TRI-CHK	Use it to select a point of attraction on the transfer drum during TR1-ON. 1: 2-sheet retention (sides B and A) 2: side A detecting 3: side B retention	
TRI-ON	Use it to execute printing for checking a 1-mm leading edge margin according to TR1-CHK settings. This mode uses the source of paper selected before starting service mode. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically.	

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Level 3	Description	Remarks
TR2-CHK	Use it to select a point of attraction on the transfer drum during TR2-ON. 1: 2-sheet retention (sides B and A) 2: side A detecting 3: side B retention	
TR2-ON	Use it to execute printing for checking an 8-mm leading edge margin according to TR2-CHK settings. This mode uses the source of paper selected before starting service mode. Using the Item 1) Select an item (to highlight), and press the OK key. 2) The operation will stop automatically.	

DPC

Measures the potential of the photosensitive drum.

Level 3	Description	Remarks
DPC	Use it to execute measurement of the potential of the photosensitive drum. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically.	
OFST	Use it to execute offset adjustment of the potential measurement circuit of the photosensitive drum. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically.	
INIT	Use it to execute initialization of the measurement data on the potential of the photosensitive drum if DPC cannot be executed normally. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically.	

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CST

COPIER>FUNCTION

Executes cassette/multifeeder size auto adjustment.

Level 3	Description	Remarks
C2-STMTR C2-A4R C3-STMTR C3-A4R	Use it to store the paper width detection reference point for cassette 2/3 (for CLC1150, cassette 3). Using ht Item 1) Adjust the side guide pal of the bottommost cassette to STMTR. 2) Select C2-STMTR or C3-STMTR (to highlight), and press the OK key. 3) Likewise, store a reference point for A4R size.	STMTR width: 139.5 mm A4R width: 210 mm For fine adjustment after storing a reference point, use paper width basic value adjustment in ADJUST>CST-ADJ.
MF-A4R MF-A6R MF-A4	Use it to store the paper width detecting reference point for the multifeeder. Using the Item 1) Place A4R paper in the multifeeder, and adjust the side guide to A4R. 2) Select MF-A4R (to highlight), and press the OK key. 3) Likewise, store the reference point for A6R and A4.	A4R width: 210 mm A6R width: 105 mm A4 width: 297 mm For fine adjustment after storing a reference point, use paper width basic value adjustment in ADJUST>CST-ADJ.

CLEANING

Checks cleaning operation.

Level 3	Description	Remarks
KCLN	Use it to rotate the transfer drum while keeping the polishing roller in contact. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically in about 5 min.	You cannot stop this mode before the ongoing job ends.

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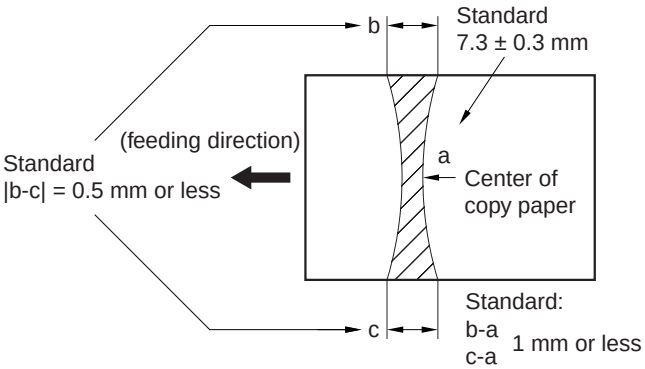
FIXING COPIER>FUNCTION

Executes automatic adjustment of fixing assembly-related items.

Level 3	Description	Remarks
NIP-CHK	Use it to generate an output for measuring the fixing nip width. This mode uses the source of paper selected before service mode is started. Using the Item 1) Make about 20 copies of the Test Sheet in A4. 2) Select the item (to highlight), and press the OK key. 3) A cyan image will automatically be prepared and discharged. 4) Measure the width of the area indicated in the figure.  Note: b and c are points 10 to 15 mm from the sides of paper.	
PUMP-ON	Use it to impregnate the felt with oil by running the fixing oil pump for about 10 min when replacing the oil applying felt. Using the Item 1) Select the item (to highlight), and press the OK key. · The fixing motor will rotate, and the fixing oil pump will turn on. 2) Press the Stop key to stop.	

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PANEL COPIER>FUNCTION

Checks the activation of the indicators on the control panel.

Level 3	Description	Remarks
LCD-CHK	Use it to check the LCD for missing dots. Using the Item 1) Select the item (to highlight), and press the OK key. · The entire LCD will alternately turn on white, and then blue. 2) To stop, press the Stop key.	
LED-CHK	Use it to start a check on the LEDs on the control panel. Using the Item 1) Select the item (to highlight), and press the OK key. · The LEDs on the control panel will turn on in sequence. 2) To stop, press LED-OFF.	
LED-OFF	Use it to end a check on the LEDs on the control panel. 1) Press the item (highlighted) to end the operation.	
KEY-CHK	Use it to start a check on the key inputs from the control panel. Using the Item 1) Select the item (to highlight). 2) Press any key to check. If normal, the corresponding character will appear on the LCD. 3) To stop, press KEY-CHK (to highlight) once again.	See Table 13-701.
TOUCHCHK	Use it to adjust the coordinates of the touch panel on the control panel. Using the Item 1) Select an item (to highlight), and press the OK key. 2) Press the nine +s appearing on the touch panel in sequence. 3) To stop, press TOUCH-CHK (to highlight) once again.	This is to match the coordinates representing a point on the touch panel and the LCD. Execute this mode if you have replaced the LCD.

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Input Keys and Indications COPIER>FUNCTION

Key	Indication	Key	Indication
Counter Check	BILL	Start	START
ACS	ACS	Clear	CLEAR
Full Color	F-COLOR	0 to 9	0 to 9
Black	BLACK	ID	ID
Original Recognition	SIZE	Interrupt	INTERRUPT
Center Shift	C-SHIFT	Additional Function	USER
Energy Saver	STAND BY	Guide	?
Stop	STOP	Reset	RESET

Table 13-701

PART-CHK

Checks the operation of various loads.

Level 3	Description	Remarks
CL	Use it to select the clutch to check. Using the Item 1) Select the item (to highlight). 2) Enter the code of the clutch using the keypad. 3) Press the OK key.	See Table 13-702. Codes 13 through 20 are not used.
CL-ON	Use it to check the operation of the clutch selected using CL. 1) Select the item (to highlight), and press the OK key. · The clutch will tun on. 2) To stop, press the Stop key.	
FAN	Use it to select the fan to check. Using the Item 1) Select the item (to highlight). 2) Enter the code of the fan using the keypad. 3) Press the OK key.	See Table 13-703. Codes 12 through 20 are not used.
FAN-ON	Use it to check the operation of the fan selected using FAN. Using the Item 1) Select the item to select (to highlight), and press the OK key. · The fan will turn on. 2) To stop, press the Stop key.	
MTR	Use it to select the motor to check. Using the Item 1) Select the item (to highlight). 2) Enter the code of the motor. 3) Press the OK key.	See Table 13-704. Codes 8 through 20 are not used.

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Level 3	Description	Remarks
MTR-ON	Use it to check the operation of the motor selected using MTR. Using the Item 1) Select the item (to highlight), and press the OK key. · The motor will turn on. 2) In about 20 sec, the operation will stop automatically.	
SL	Use it to select the solenoid to check. Using the Item 1) Select the item (to highlight). 2) Enter the code of the solenoid using the keypad. 3) Press the OK key.	See Table 13-705. Codes 10 through 20 are not used.
SL-ON	Use it to check the operation of the solenoid selected using SL. Using the Item 1) Select the item (to highlight), and press the OK key. · The solenoid will turn on. 2) To stop, press the Stop key.	
SHV	Use it to select the high-voltage output to check. Using the Item 1) Select the item (to highlight). 2) Enter the code of the high-voltage output using the keypad. 3) Press the OK key.	See Table 13-706. Codes 6 through 20 are not used.
SHV-ON	Use it to check the operation of the high-voltage output selected using SHV. Using the Item 1) Select the item (to highlight), and press the OK key. · The high-voltage output will turn on. 2) The operation will stop automatically after generating a specific high-voltage output.	

Codes and Clutches

Code	Name	Code	Name
0	duplexing feed clutch (CL14)	7	cassette 1 pickup clutch (CL11)
1	---	8	cassette 2 pickup clutch (CL12/DCL12)
2	registration clutch (CL9)	9	cassette 3 pickup clutch (CL13/DCL13)
3	multifeeder feed clutch (CL10)	10	not used
4	multifeeder pickup clutch (CL16)	11	postcard feed clutch (CL18)
5	deck pickup clutch (CL102)	12	buffer path clutch (CL1)
6	re-pickup clutch (CL15)	-	-

Table 13-702

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Codes and Fans

COPIER>FUNCTION

Code	Name	Code	Name
0	electrical unit cooling fan (FM8)	6	not used
1	IP cooling fan (FM7)	7	primary charging assembly fan (FM3)
2	exhaust fan (FM2)	8	delivery cooling fan (FM11)
3	ozone suction fan (FM5)	9	original exposure cooling fan 1 (FM1)
4	toner suction fan (FM6)	10	not used
5	laser scanner motor cooling fan (FM4)	11	original exposure system cooling fan 2/3 (FM14/15)

Table 13-703

Codes and Motors

Code	Name	Code	Name
0	hopper motor (M10)	4	laser scanner motor (M3)
1	transfer drum cleaner brush motor (M8)	5	fixing motor (M5)
2	not used	6	drum motor (M2)
3	duplexing motor (M14)	7	main motor (M4)

Table 13-704

Codes and Solenoids

Code	Name	Code	Name
0	multifeeder pickup solenoid (SL14)	5	pickup roller 3 solenoid (SL9/DSL9)
1	deck pickup solenoid (SL101)	6	buffer path solenoid 1 (SL1)
2	duplexing paper feed roller solenoid (SL13)	7	buffer path solenoid 2 (SL2)
3	pickup roller 1 solenoid (SL7)	8	attraction roller solenoid (SL6)
4	pickup roller 2 solenoid (SL8/DLS8)	9	separation claw solenoid (SL4)

Table 13-705

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Codes and High-Voltage Outputs

COPIER>FUNCTION

Code	High-voltage output	Description
0	---	Absence of high-voltage output
1	primary output, grid output	drum motor ON pre-exposure lamp ON photosensitive drum 1 rotation primary output, grid output (500 V) ON (wait for stop command; equivalent of photosensitive drum 10 rotations) primary output, grid output OFF photosensitive drum 1 rotation pre-exposure lamp OFF drum motor OFF
2	primary output, grid output, M color developing bias output	drum motor ON pre-exposure lamp ON photosensitive drum 1 rotation primary output, grid output (500 V) ON M color developing assembly locked, developing bias (AC/DC) ON (wait for stop command; equivalent of photosensitive drum 10 rotations) M developing assembly unlocked, developing bias (AC/DC) OFF primary output, grid output OFF photosensitive drum 1 rotation pre-exposure lamp OFF drum motor OFF
3	primary output, grid output, C developing bias output	drum motor ON pre-exposure lamp ON photosensitive drum 1 rotation primary output, grid output (500 V) ON C developing assembly locked, developing bias (AC/DC) ON (wait for stop command; equivalent of photosensitive drum 10 rotations) C developing assembly unlocked; equivalent of 10 rotations) primary output, grid output OFF photosensitive rum 1 rotation pre-exposure lap OFF drum motor OFF

Table 13-706a

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Code	High-voltage output	Description
4	primary output, grid output, Y developing assembly bias output	drum motor ON pr-exposure lamp ON photosensitive drum 1 rotation primary output, grid output (500 V) ON Y developing assembly locked, developing bias (AC/DC) ON (wait for stop command; equivalent of photosensitive drum 10 rotations) Y developing assembly unlocked, developing bias (AC/DC) OFF primary output, grid output OFF photosensitive drum 1 rotation pre-exposure lamp OFF drum motor OFF
5	primary output, grid output, Bk color developing bias output	drum motor ON pre-exposure lamp ON photosensitive drum 1 rotation primary output, grid output (500 V) ON Bk color developing assembly locked, developing bias (AC/DC) ON (wait for stop command; equivalent of photosensitive drum 10 rotations) Bk developing assembly unlocked, developing bias (AC/DC) OFF primary output, grid output OFF photosensitive drum 1 rotation pre-exposure lamp OFF drum motor OFF

Table 13-706b

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CLEAR

COPIER>FUNCTION

Initializes the RAM, and resets the jam/ error history.

Level 3	Description	Remarks
ERR	Use it to reset an error code (E000, E004, E005, E008, E020, E717). Using the Item 1) Select the item (to highlight), and press the OK key. 2) Turn off and then on the power switch.	Be sure to turn off and then on the power switch. Note: 'E020' is indicated only when the detail code is 'xxE0'.
DC-CON	Use it to initialize the RAM of the DC-CPU on the CPU PCB. Using the Item 1) Select the item (to highlight), and press the OK key. 2) Turn off and then on the power switch.	Be sure to turn off and then on the power switch.
R-CON	Use it to initialize the RAM of the R-CPU on the CPU PCB. 1) Select the item (to highlight), and press OK key. 2) Turn off and then on the power switch.	Be sure to turn off and then on the power switch.
MMI-COPY	Use it to initialize the RAM of the PANEL-CPU on the CPU PCB. Using the Item 1) Select the item (to highlight), and press the OK key. 2) Turn off and then on the power switch.	Be sure to turn off and then on the power switch.
SERVICE	Use it to reset the backup data of service mode. Using the Item 1) Select the item (to highlight), and press the OK key. 2) Turn off and then on the power switch.	Be sure to turn off and then on the power switch.
JAM-HIST	Use it to reset the jam history. Using the Item 1) Select the item (to highlight), and press the OK key. · The jam history will be reset.	
ERR-HIST	Use it to reset the error history. Using the Item 1) Select the item (to highlight), and press the OK key. · The error history will be reset.	
E354-CLR	---	
E355-CLR	---	

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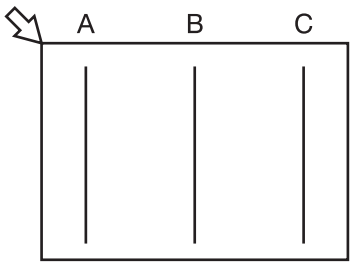
MISC-R COPIER>FUNCTION

Checks the operation of the reader unit.

Level 3	Description	Remarks
SCANLAMP	Use it t check the activation of the scanning lamp. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The scanning lamp will remain on for several seconds, and then will turn off automatically.	
SC-MOVE	Use it to check the operation of the scanner. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The scanner moves to point A, and '1' is indicated on the display. 3) Each press on the OK key causes the scanner to move as follows: HP → B → HP → C → HP. 4) The operation ends when the scanner moves to 4 (HP) in response to a press on the OK key. 1: HP → A → HP 2: HP → B → HP 1: HP → C 4: HP	
RESERVE 1 to 4	For R&D	

MISC-P

Checks the operation of the printer unit.

Level 3	Description	Remarks
DRUM-ROT	Use it to rotate the photosensitive drum idly for a specific period of time. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The photosensitive drum rotates idly for 30 sec, and will stop automatically.	
POWEROFF	Use it to check the operation of the auto power-off mechanism. 1) Select the item (to highlight), and press the OK key. · The power switch will turn off automatically.	

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COPIER>FUNCTION

Level 3	Description	Remarks
B-HP	Use it to rotate the attraction/transfer locking cam motor, thereby moving the cam to the home position (HP). Using the Item 1) Select the item (to highlight), and press the OK key. 2) The attraction/transfer locking cam will stop at HP.	
B-ATT-TR	Use it to rotate the attraction/transfer locking cam motor, thereby moving the cam to the point of attraction/transfer. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The cam will move to the point of attraction/ transfer, and will stop automatically.	
B-TR	Use it to rotate the attraction/transfer locking cam motor, thereby moving the cam to the point of transfer. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The cam will move to the point of transfer, and will stop automatically.	
B-CLN	Use it to rotate the attraction/transfer locking cam motor, thereby moving the cam to the transfer drum cleaning position. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The cam will move to the transfer drum cleaning position, and will stop automatically.	

SENS-ADJ

Checks sensor-related operations.

Level 3	Description	Remarks
CLN-OFST	Use it to execute temperature correction for the pre-cleaning paper sensor (PS72). Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically. · The screen (COPIER>ADJUST>SENS-ADJ) will show the readings. Be sure to record them on the service label.	Execute this item when you have replaced the pre-cleaning paper sensor (PS72) or removed it for cleaning.

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Projector-Related Items PRJ>FUNCTION

Level 3	Description	Remarks
LAMP	Use it to keep the lamp of the projector on for a specific period of time. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The lamp of the projector will remain on for about 1 min, and will turn off automatically.	
CCD	Use it to read CCD gain adjustment and data at time of installing a projector. Using the Item 1) Select the item (to highlight), and press the OK key. 2) The operation will stop automatically.	Note: Do not execute this mode while the copier is warming up.

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F. OPTION (settings mode)

The COPIER>OPTION screen looks like the following, and it offers the items shown on the pages that follow:

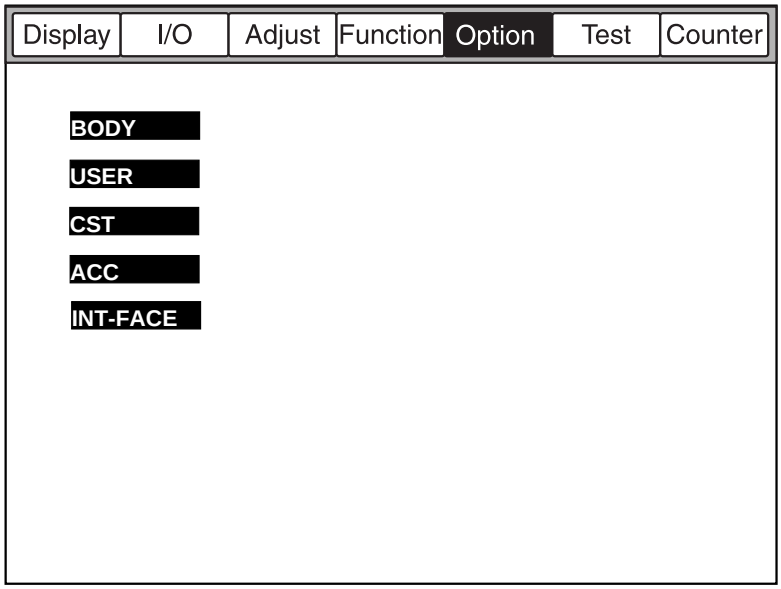

Figure 13-718

COPIER>OPTION Items

Level 1	Level 2	Level 3	Description
OPTION	BODY	CCD-DISP	use it to switch data display on the DISPLAY>CCD screen (0: normal mode, 1: precious metal mode)
		CVR-TYPE	use it to enter a CVR version (0: normal, 1: new type)
		MODEL-SZ	use it to switch destination (0: AB (6R, 5E), 1: Inch (5R, 4E), 2: A (3R, 3E), 3: AB/Inch (6R, 5E)
		F-WEB	use it to change the frequency of turning on the fixing cleaning belt (1 through 255; default=1)
		PASCAL	use it to switch gradation correction data, contrast potential obtained by auto gradation correction (0: disable, 1: enable)
		PSCL-MD	use it to smooth out the gradations on an image from an external image controller (0: as before, 1: disable, 2: enable)
		EC-GLASS	use it to select the presence/absence of EC coating on the copyboard glass (0: absent, 1: present)
		LPSTCL-ON	use it to switch the post-cleaning charging mechanism (0: normal, 1: all environments)
	USER	METAL	use it to turn on/off precious metal mode (0: off, 1: on, default=0)
		OHP-MODE	use it to select the copy image maximum density when copying on transparencies (0: Dmax=1.3, 1: Dmax=1.6, default=0)
		COPY-LIM	use it to change the upper limit on the copy count (1 to 100)
		COUNTER1	use it to select a counter type (soft counter 1 on the control panel of a 120/230-V model) to suit the user or dealer (0: no counter; 1 through 95)
		COUNTER2	use it to select a counter type (soft counter 2 on the control panel of a 120/230-V model) to suit the user or dealer (0: no counter; 1 through 95)
		COUNTER3	use it to select a counter type (soft counter 3 on the control panel of a 120/2300V model) to suit the user or dealer (0: no counter; 1 through 95)
		COUNTER4	use it to select a counter type (soft counter 4 on the control panel of a 20/230-V model) to suit the user or dealer (0: no counter; 1 through 95)
		COUNTER5	use it to select a counter type (soft counter 5 on the control panel) to suit the user or dealer (0: no counter; 1 through 95)
		COUNTER6	use it to select a counter type (soft counter 6 on the control panel) to suit the user or dealer (0: no counter; 1 to 95)
		CONTROL	use it to enable copying, printing, and scanning without the control key, control card, or ID No. input.
		COLDOFST	for R&D
		MONO-SPD	for R&D
		PRJ-L-SP	use it to prohibit 2-side retention in color copying mode (other than black mono) with the projector in use (0: normal, 1: prohibit)
Cont'd	Cont'd		

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	BKL-L-SP	use it to prohibit 2-side retention in color copying mode (other than black mono) with back light mode selected (0: normal, 1: prohibit)
CST	P-SZ-C1	use it to select a paper size for cassette (Table 13-708)
	P-SZ-C2	use it to select a paper size for cassette 2 (for CLC1150, cassette 1; Table 13-708)
ACC	DK-P	use it to select a paper size for the paper deck (0: A4, 1: B5, 2: LTR)
	COIN	use it to turn on/off the coin vender notation
INT-FACE	REMOTE	use it to make settings for connecting an external controller (0 to 7)
	B-CLR	use it to specify the presence/absence of a copy data controller (0: not connected, 1: connected)
	P-PRT-MF	Use it to set priority on manual settings data (paper size, paper type, duplexing) when manual feed is selected with an external image controller in use (0: priority on local, 1: priority on controller; 2: priority on controller; default=2)

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PRJ>OPTION Items

Level 1	Level 2	Level 3	Description
OPTION		BK-LIGHT	not used

EDITOR>OPTION Items

Level 1	Level 2	Level 3	Description
OPTION		ED-MODE	use it to switch editor operation mode (0: prohibit input, 1: 1-point input, 2: continuous input)

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BODY COPIER>OPTION

Level 3	Description	Remarks
CCD-DISP	Use it to switch data display within the DISPLAY>CCD screen.	0: normal mode 1: precious metal mode
CVR-TYPE	Use it to enter a CVR version.	0: normal 1: new type
MODEL-SZ	Use it to switch the destination.	0: AB (6R, 5E) 1: Inch (5R, 4E) 2: A (3R, 3E) 3: AB/Inch (6R, 5E)
F-WEB	Use it to change the frequency of turning on the fixing cleaning belt.	1 to 255 default: 1
PASCAL	Use it to switch the gradation correction data, contrast potential obtained by auto gradation correction	0: use 1: do not use
PSCL-MD	Use it to smooth out the gradation of an image from an external image controller.	0: as before 1: do not use 2: smooth
EC-GLASS	Use it to specify the presence/absence of EC coating on the copyboard glass. · After specifying, be sure to turn off and then on the power switch.	0: coating provided 1: coating not provided
PSTCL-ON	Use it to switch the post-cleaning charging mechanism. · Take advantage of the item if memory or cyan/ black dots appear on the edges of paper in a low humidity environment.	0: normal 1: ON in all environments

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USER COPIER>OPTION

Selects user-related settings.

<table>
<tr><th>Level 3</th><th>Description</th><th>Remarks</th></tr>
<tr><td>METAL</td><td>Use it to turn on and off precious mode.</td><td>0: off
1: on
default: 0</td></tr>
<tr><td>OHP-MODE</td><td>Use it to select the copy image maximum density or copying on transparencies.</td><td>0: Dmax=1.3
1: Dmax=1.6
Default: 0</td></tr>
<tr><td>COPY-LIM</td><td>Use it to change the upper limit on the copy count.</td><td>1 through 100</td></tr>
<tr><td>COUNTER1
COUNTER2
COUNTER3
COUNTER4</td><td>Use it to select a counter type to suit the user or dealer (soft counter 1 through 4 on the control panel of a 120/230-V model).</td><td>0: do not indicate
1 to 95
See Table 13-707.</td></tr>
<tr><td>COUNTER5
COUNTER6</td><td>Use it to select a counter type to suit the use or dealer (soft counter 5/6 on the control panel).</td><td>0: do not indicate
1 to 95
See Table 13-707.</td></tr>
<tr><td>CONTROL</td><td>In the absence of a control key, control card, or ID No. input, copying, remote printing, or remote scanning is permitted with conditions by changing the last three digits of CONTROL.

· Disabling Control Key with Conditions
<table><tr><th>1st digit of CONTROL</th><th>Black-and-white copying</th><th>Remote printing</th><th>Remote scanning</th></tr><tr><td>0</td><td>NO</td><td>NO</td><td>NO</td></tr><tr><td>1</td><td>NO</td><td>NO</td><td>YES</td></tr><tr><td>2</td><td>NO</td><td>YES</td><td>YES</td></tr><tr><td>3</td><td>YES</td><td>YES</td><td>YES</td></tr><tr><td>4</td><td>YES</td><td>YES</td><td>YES</td></tr></table>Note: See the Reference Table.

· Disabling Control Card with Conditions
<table><tr><th>2nd digit of CONTROL</th><th>Black-and-white copying</th><th>Remote printing</th><th>Remote scanning</th></tr><tr><td>0</td><td>NO</td><td>NO</td><td>NO</td></tr><tr><td>1</td><td>NO</td><td>NO</td><td>YES</td></tr><tr><td>2</td><td>NO</td><td>YES</td><td>YES</td></tr><tr><td>3</td><td>YES</td><td>YES</td><td>YES</td></tr><tr><td>4</td><td>YES</td><td>YES</td><td>YES</td></tr></table>Note: See the Reference Table.</td><td>Settings of each digit: 0 to 4
Standard for each digit: 0
CONTROL xxx
→ 1st digit
→ 2nd digit
→ 3rd digit</td></tr>
</table>

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<table>
<tr><th>Level 3</th><th>Description</th><th>Remarks</th></tr>
<tr><td>CONTROL</td><td>
· Disabling ID Number Input with Conditions
<table>
<tr><th>3rd digit of CONTROL</th><th>Black-and-white copying</th><th>Remote printing</th><th>Remote scanning</th></tr>
<tr><td>0</td><td>NO</td><td>NO</td><td>NO</td></tr>
<tr><td>1</td><td>NO</td><td>NO</td><td>YES</td></tr>
<tr><td>2</td><td>NO</td><td>YES</td><td>YES</td></tr>
<tr><td>3</td><td>YES</td><td>YES</td><td>YES</td></tr>
<tr><td>4</td><td>YES</td><td>YES</td><td>YES</td></tr>
</table>
Note: See the Reference Table.

Reference Table
<table>
<tr><th colspan="2">Counter type</th><th>Disabling control key with conditions</th><th>Disabling control card with conditions</th><th>Disabling ID No. input with conditions</th></tr>
<tr><td colspan="2">Counter check screen counter</td><td>YES</td><td>YES</td><td>YES</td></tr>
<tr><td>CC-V</td><td>Card counter</td><td>YES</td><td>NO</td><td>YES</td></tr>
<tr><td>CC-X</td><td>Card counter</td><td>YES</td><td>NO</td><td>YES</td></tr>
<tr><td>-</td><td>Device* total</td><td>YES</td><td>YES</td><td>YES</td></tr>
<tr><td colspan="2">ID No. counter</td><td>YES</td><td>YES</td><td>NO</td></tr>
</table>
Yes: increment the count.
No: do not increment the count.

Guide to the Reference Table
The counter on the Counter Check screen is incremented under all conditions; i.e., disabling control key, control card, or ID No. input with conditions.
1 For CC-V
In the case of '3' or '4' for black-and-white copying without a card, the CC-V card counter will not be incremented.
In the case of '2', '3', or '4' for remote printing without a card, the CC-V card counter will not be incremented.
In the case of '2' or '4' for remote printing, the CC-V card counter will not be incremented regardless of the presence/absence of a CC-V card.
</td><td>* Copy data controller or remote diagnostic device.</td></tr>
</table>

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Level 3	Description	Remarks
CONTROL	2 For CC-X The device* total counter is incremented under all conditions; i.e., disabling control key, control card, or ID No. input with conditions. In the case of '3' or '4' for black-and-white copying without a card, the CC-V card counter will not be incremented. In the case of '2', '3', or '4' for remote printing without a card, the CC-X card counter will not be incremented. In the case of '2' or '4' for remote printing, the CC-X card counter will be incremented regardless of the presence/absence of a CC-X card. 3 With ID No. Registration in Use For '3' or '4' for black-and-white copying without an ID No. input, the counter for the group in question for the ID. No. will not be incremented. For '2', '3', or '4' for remote printing without an ID No. input, the counter for the group in question for the ID No. will not be incremented. For '2' or '4' for remote printing, the counter for the group in question for the ID No. will not be incremented regardless of the presence/absence of an ID No. or password input. Example · When CONTROL is set to '2', In the absence of a control key, remote printing and remote scanning are possible. In the absence of a control card, no job is possible. In the absence of an ID No. input, no job is possible. · When CONTROL is set to '421', In the absence of a control key, only remote scanning is possible. In the absence of a control card, remote printing and remote scanning are possible. In the absence of an ID No. input, black-and-white copying, remote printing, are remote scanning are possible.	* copy data controller or remote diagnostic device.
COLDOFST	for R&D	
MONO-SPD	for R&D	

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CST

COPIER>OPTION

Selects cassette-related settings.

Level 3	Description	Remarks
P-SZ-C1	Use it to select a paper size for cassette 1.	See Table 13-608.
P-SZ-C2	Use it to select a paper size for cassette 2 (for CLC1150, cassette 1).	

ACC

Selects accessory-related settings.

Level 3	Description	Remarks
COIN	Use it to turn on/off the coin vendor notation.	
DK-P	Use it to select a paper size for the paper deck.	0: A4 1: B5 2: LTR

INT-FACE

Selects interface-related settings.

Level 3	Description	Remarks
REMOTE	Use it to make settings when an external controller is connected. 0: local; priority on the settings selected on the copier. 1: remote 1; uses parameters selected on the controller, with the remaining settings from the copier 2: remote 2; uses parameters selected on the controller, with the remaining settings from the factory defaults of the copier **Note:** If you selected '0' for this item, be sure to set all color balance settings under 'print color' of user mode (adjust/cleaning) to '+5'.	default: 2 Controller Parameters · original type (photo, auto, text) · sharpness · color balance Copier Parameters · density · background level adjustment · hue, saturation, etc.
B-CLR	Use it to specify the presence/absence of a copy data controller.	0: not connected (detached) 1: connected
P-PRT-MF	Use it to select priority on settings data for manual pickup with an external image controller in use (local or controller). 0: local; priority on the settings of the copier 1: remote 1; uses parameters selected on the controller, with the remaining settings from the copier 2: remote 2; uses parameters selected on the controller, with the remaining settings from the factory defaults of the copier	Controller Parameters · paper size · paper type · duplexing

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Soft Counter Specifications

No.	Counter	Function	Color	Paper size	Count for double-sided sheet	Increment for large-size sheet
0	no indication	-	-	-	-	-
1	total 1	C+P	All	M	-	1
2	total 2	C+P	All	M	-	2
3	total (full color 1)	C+P	4C	M	-	1
4	total (full color 2)	C+P	4C	M	-	2
5	total (mono color)	C+P	Mono	M	-	1
6	total (black-and-white1)	C+P	Bk	M	-	1
7	total (black-and-white2)	C+P	Bk	M	-	2
8	total (large)	C+P	All	L	-	1
9	total (small)	C+P	All	S	-	-
10	copy 1	C	All	M	-	1
11	copy 2	C	All	M	-	2
12	copy (full color 1)	C	4C	M	-	1
13	copy (full color 2)	C	4C	M	-	2
14	copy (mono color 1)	C	Mono	M	-	1
15	copy (mono color 2)	C	Mono	M	-	2
16	copy (black-and-white 1)	C	Bk	M	-	1
17	copy (black-and-white 2)	C	Bk	M	-	2
18	copy (full color, large)	C	4C	L	-	1
19	copy (full color, small)	C	4C	S	-	-
20	copy (mono color, large)	C	Mono	L	-	1
21	copy (mono color, small)	C	Mono	S	-	-
22	copy (black-and-white, large)	C	Bk	L	-	1
23	copy (black-and-white, small)	C	Bk	S	-	-
24	copy (full color, large, double-sided)	C	4C	L	○	1
25	copy (mono color, small, double-sided)	C	4C	S	○	-
26	copy (mono color, large, double-sided)	C	Mono	L	○	1
27	copy (mono color, small, double-sided)	C	Mono	S	○	-
28	copy (black-and-white, large, double-sided)	C	Bk	L	○	1
29	copy (black-and-white, small, double-sided)	C	Bk	S	○	-

Table 13-707a

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No.	Counter	Function	Color	Paper size	Count for double-sided sheet	Increment for large-size sheet
30	print 1	P	All	M	-	1
31	print 2	P	All	M	-	2
32	print (full color 1)	P	4C	M	-	1
33	print (full color 2)	P	4C	M	-	2
34	print (mono color 1)	P	Mono	M	-	1
35	print (mono color 2)	P	Mono	M	-	2
36	print (black-and-white 1)	P	Bk	M	-	1
37	print (black-and-white 2)	P	Bk	M	-	2

Table 13-707a

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No.	Counter	Function	Color	Paper size	Count for double-sided sheet	Increment for large-size sheet
38	print (full color, large)	P	4C	L	-	1
39	point (full color, small)	P	4C	S	-	-
40	print (mono color, large)	P	Mono	L	-	1
41	print (mono color, small)	P	Mono	S	-	-
42	print (black-and-white, large)	P	Bk	L	-	1
43	print (black-and-white, small)	P	Bk	S	-	-
44	print (full color, large, double-sided)	P	4C	L	○	1
45	print (full color, small, double-sided)	P	4C	S	○	-
46	print (mono color, large, double-sided)	P	Mono	L	○	1
47	print (mono color, small, double-sided)	P	Mono	S	○	-
48	print (black-and-white, large, double-sided)	P	Bk	L	○	1
49	print (black-and-white, small, double-sided)	P	Bk	S	○	-
54	copy scan (full color, large)	S	4C	L	-	1
55	copy scan (full color, small)	S	4C	S	-	-
56	copy scan (black-and-white, large)	S	Bk	L	-	1
57	copy scan (black-and-white, small)	S	Bk	S	-	-
58	copy + print (full color, large)	C+P	4C	L	-	1
59	copy + print (full color, small)	C+P	4C	S	-	-
60	copy + print (black-and-white, large)	C+P	Bk	L	-	1
61	copy + print (black-and-white, small)	C+P	Bk	S	-	-
62	copy + print (black-and-white 2)	C+P	Bk	M	-	2
63	copy + print (black-and-white 1)	C+P	Bk	M	-	1
64	copy + print (full color + mono color, large)	C+P	4C+Mono	L	-	1
65	copy + print (full color + mono color, small)	C+P	4C+Mono	S	-	-
66	copy + print (full color + mono color , 2)	C+P	4C+Mono	M	-	2
67	copy + print (full color + mono color, 1)	C+P	4C+Mono	M	-	1
68	copy (full color + mono color, large)	C	4C+Mono	L	-	1
69	copy (full color + mono color, small)	C	4C+Mono	S	-	-

Table 13-707b

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No.	Counter	Function	Color	Paper size	Count for double-sided sheet	Increment for large-size sheet
70	copy (full color + mono color, 2)	C	4C+Mono	M	-	2
71	copy (full color + mono color, 1)	C	4C+Mono	M	-	1
72	print (full color + mono color, large)	P	4C+Mono	L	-	1
73	print (full color + mono color, small)	P	4C+Mono	S	-	-
74	print (full color + mono color, 2)	P	4C+Mono	M	-	2
75	print (full color + mono color, 1)	P	4C+Mono	M	-	1
76	copy + print (large)	C+P	All	L	-	1
77	copy + print (small)	C+P	All	S	-	-
78	copy + print (2)	C+P	All	M	-	2
79	cop + ring (1)	C+P	All	M	-	1

Table 13-707b

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No.	Counter	Function	Color	Paper size	Count for double-sided sheet	Increment for large-size sheet
80	copy (large)	C	All	L	-	1
81	copy (small)	C	All	S	-	-
82	print (large)	P	All	L	-	1
83	print (small-size)	P	All	S	-	-
84	total (mono-color, large)	C+P	Mono	L	-	1
85	total (mono-color, small)	C+P	Mono	S	-	-
86	total (black-and-white, large)	C+P	Bk	L	-	1
87	total (black-and-white, small)	C+P	Bk	S	-	-
88	copy scan (full-color)	S	4C	M	-	-
89	copy scan (black-and-white)	S	Bk	M	-	-
90	copy scan (large)	S	All	L	-	-
91	copy scan (small)	S	All	S	-	-
92	copy scan (total)	S	All	M	-	-
93	copy scan (large-size; 4)	S	All	L	-	-
94	copy scan (small-size; 4)	S	All	S	-	-
95	copy scan (total; 4)	S	All	M	-	-

Table 13-707c

Guide to the table

- Function
  C: copy, P: print, S: scan
- Color
  4C: 4-color full
  MONO: yellow, magenta, cyan
  Bk: black
  ALL: 4C, MONO, and Bk
- Paper Size
  L: large-size (larger than B4)
  S: small-size (B4 and smaller)
  M: both large and small
- Count at Duplexing
  ○: incremented by 1
  -: same as normal copying
- Count Increment for Large-Size Paper
  1: incremented by 1
  2: incremented by 2

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Codes and Cassette Paper Sizes

Code	Notation	Paper	Code	Notation	Paper
01	A1	A1	21	LGL	Legal
02	A2	A2	22	K-LGL	Korean Government
03	A3R	A3R	23	K-LGLR	Korean Government R
04	A3	A3	24	FLSC	Foolscap
05	A4R	A4R	25	A-FLS	Australian
06	A4	A4	26	OFI	Foolscap
07	A5	A5	27	E-OFI	Oficio
08	A5R	A5R	28	B-OFI	Ecuadorian Officio
09	B1	B1	29	A-LTR	Bolivian Officio
10	B2	B2	30	A-LTRR	Argentine Letter
11	B3	B3	31	G-LTR	Argentine Letter-R
12	B4R	B4R	32	G-LTRR	Government Letter
13	B4	B4	33	A-LGL	Government Letter-R
14	B5R	B5R	34	G-LGL	Argentine Legal
15	B5	B5	35	FGLI	Government Legal
16	11x17	11x17	36	A-OFI	Folio
17	LTRR	Letter-R	37		Argentine Officio
18	LTR	Letter	38		
19	STMT	Statement	39		
20	STMTR	Statement-R	40	ALL	

Table 13-708

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Projector-Related Items PRJ>OPTION

Level 3	Description	Remarks
BK-LIGHT (not used)	Use it to enable or disable indication of a mode on the User screen when copying positive film with a protective sheet using back light BOX.	0: do not indicate 1: indicate default: 0

Editor-Related Items EDITOR>OPTION

Level 3	Description	Remarks
ED-MODE	Use it to switch editor operation mode.	0: prohibit input 1: 1-point input 2: continuous input

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G. PG (test print)

The COPIER>TEST screen looks like the following, and it offers the items discussed on the pages that follow:

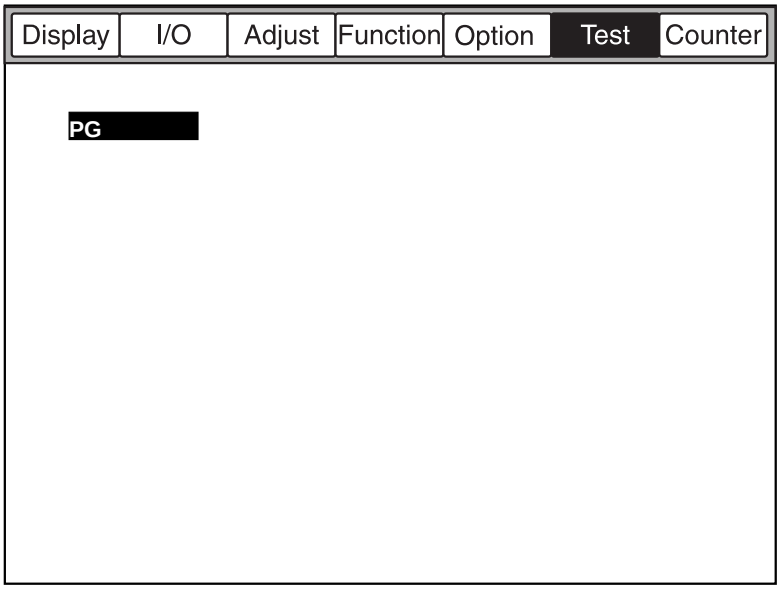

Figure 13-719

COPIER>TEST Items

Level 1	Level 2	Level 3	Description
TEST	PG	TYPE	use it to enter the type number of a test print, and press the Copy Start key to start printing (00: normal copying)
		TXPH	use it to switch the number of lines for test printing (0: 200 lines, 1: 400 lines, 2: 800 lines)
		THRU	use it to switch LUT for test printing (0: LUT present, 1: LUT absent)
		DENS-Y	use it to adjust the Y density for TYPE=05 during test printing (0 to 255; a higher setting darkens the image)
		DENS-M	use it to adjust the M density for TYPE=05 during test printing (0 to 255; a higher setting darkens the image)
		DENS-C	use it to adjust the C density for TYPE=05 during test printing (0 to 255; a higher setting darkens the image)
		DENS-K	use it to adjust the Bk density for TYPE=05 during test printing (0 to 255; a higher setting darkens the image)
		COLOR-Y	use it to set the Y output for each TYPE (0: no output, 1: output)
		COLOR-M	use it to set the M output for each TYPE (0: no output, 1: output)
		COLOR-C	use it to set the C output for each TYPE (0: no output, 1: output)
		COLOR-K	use it to set the Bk output for each TYPE (0: no output, 1: output)

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PG COPIER>TEST

Generates test prints.

Level 3	Description	Remarks
TYPE	Use it to enter the type No. of a test print, and press the Copy Start key to start printing.	00: normal copying See Table 13-709. Be sure to set it back to '00' at the end of test printing.
TXPH	Use it to switch the number of lines used for test printing.	0: 200 lines 1: 400 lines 2: 800 lines
THRU DENS-Y DENS-M DENS-C DENS-K	Use it to switch LUT used for test printing.	0: LUT present 1: LUT absent 0 to 255
COLOR-Y COLOR-M COLOR-C COLOR-K	Use it to set the output (each color) for each TYPE. · For example, to generate on M mono test print, set COLOR-M to '1', and others to '0'.	0: do not generate 1: generate You can generate no more than one color.

Input Numbers and Test Prints

Input No.	Description	Input No.	Description
00	image from CCD (normal copying)	10	MCYK horizontal stripes (laser FF activation)
01	for R&D	11	for R&D
02	256 colors	12	MCYK 64 gradations
03	256 gradations	13	BGR64 gradations
04	16 gradations (17 gradations)	14	full color 16 gradations (17 gradations)
05	100% halftone	15	full color light area 16 gradations (17 gradations)
06	grid	16	MCYK horizontal stripes (laser A0 activation)
07	image position correction control pattern	-	-
08	for R&D		
09	for R&D		

Table 13-709

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H. COUNTER (counter mode)

The COUNTER mode screen looks like the following, and it offers the items discussed on the pages that follow:

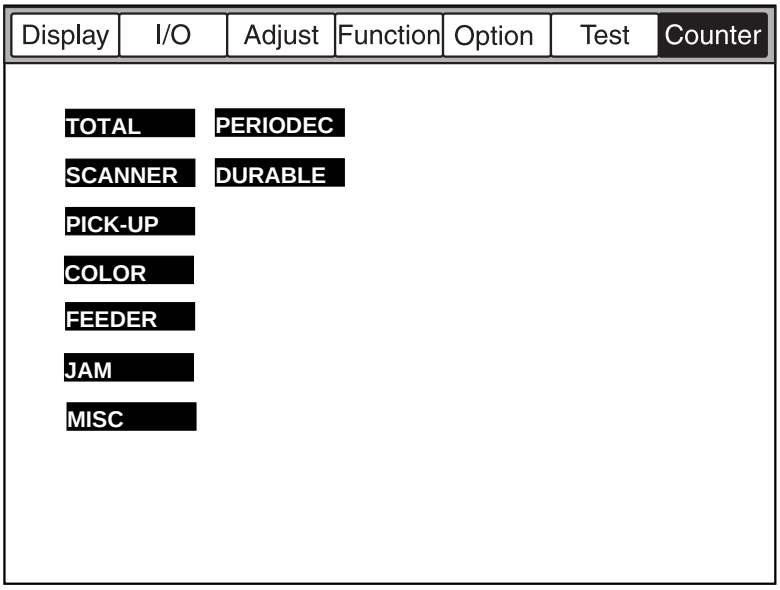

Figure 13-720

· You can check the number of times each mechanism has operated.

Resetting a Counter Reading

1) Select an item to highlight.
2) Press the Clear key on the control panel.
   The counter will be reset to '00000000'.

· Here, the notations "large-size" and "small-size" are used as follows:
  large size covers B4 or larger sheets
  small size covers sheets smaller than B4.

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COPIER>COUNTER Items

Level 1	Level 2	Level 3	Description
COUNTER	TOTAL	SERVICE1	total counter 1 for service
		SERVICE2	total counter 2 for service
		TTL	total counter (copy + printer + synthesis)
		L-TTL	large-size copy total counter (copy+ printer + synthesis)
		S-TTL	small-size copy total counter (copy + printer + image synthesis)
		C-L-TTL	color large-size copy total counter (copy + print + synthesis)
		C-S-TTL	color small-size copy total counter (cop + print + synthesis)
		K-L-TTL	black large-size copy total counter (copy + print + synthesis)
		K-S-TTL	black small-size copy total counter (copy + print + synthesis)
		COPY	total copy counter
		L-COPY	large-size copy total counter
		S-COPY	small-size copy total counter
		C-L-COPY	color large-size copy total counter
		C-S-COPY	color small-size coy total counter
		K-L-COPY	black large-size copy total counter
		K-S-COPY	black small-size copy total counter
		PRINT	total print counter
		L-PRINT	large-size print total counter
		S-PRINT	small-size print total counter
		C-L-PRINT	color large-size print total counter
		C-S-PRINT	color small-size print total counter
		K-L-PRINT	black large-size print total counter
		K-S-PRINT	black small-size print total counter
		MIX	synthesis total counter
		L-MIX	large-size synthesis total counter
		S-MIX	small-size synthesis total counter
		4C-TTL	full color (4 colors) copy total counter
		Y-COPY	Y mono copy counter
		M-COPY	M mono copy counter
		C-COPY	C mono copy counter
		K-COPY	Bk mono copy counter
		PRJ	projector copy counter
		PS-XJ	PS-XJ total print count
		L-PS-XJ	PS-XJ large-size print total counter
		S-PS-XJ	PS-XJ small-size print total counter

Cont'd

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SCANNER	SC-TTL	scanner total scan counter
	SC-COPY	scan counter during copying
	SC-PRINT	scan counter during printing
	SC-PSXJ	PS-XJ scan counter
PICK-UP	C1	cassette 1 copy total counter
	L-C1	cassette 1 large size copy total counter
	S-C1	cassette 1 small-size copy total counter
	C2	cassette 2 copy total counter
	L-C2	cassette 2 large-size copy total counter
	S-C2	cassette 2 small-size copy total counter
	C3	cassette 3 copy total counter
	L-C3	cassette 3 large-size copy total counter
	S-C3	cassette 3 small-size copy total count
	MF	multifeeder copy total counter
	L-MF	multifeeder large-size cop total counter
	S-MF	multifeeder small-size copy total counter
	DK	paper deck coy total counter
	2-SIDE	2nd side pickup total counter
	L-2-SIDE	large-size 2nd side pickup total counter
	S-2-SIDE	2nd side small-size pickup total counter
COLOR	Y-DEV	number of locking operations (Y developing assembly)
	M-DEV	number of locking operations (M developing assembly)
	C-DEV	number of locking operations (C developing assembly)
	K-DEV	number of locking operations (Bk developing assembly)
FEEDER	FEED	feeder copy total count
	L-FEED	feeder large-size copy total counter
	S-FEED	feeder small-size copy total counter
	PICKUP-L	feeder left pickup copy total counter
JAM	TOTAL	copier copy jam total counter
	PRINT	copier print jam total counter
	FEEDER	feeder print jam total counter
	SORTER	sorter print jam total counter
MISC	TOTALPWE	length of power supply time
	FIX-WEB	fixing cleaning belt counter (initially, 200; -1 for each operation after a warning is issued)
	PRI-CLN	primary charge wire auto cleaning counter (initially, 2000; -4 per full color copy, -1 per mono color copy)
	P-ROLLER	polishing roller cleaning counter (initially, 1000; -1 per copy)
	STR-STPL	stapling counter for the stapler sorter

Cont'd

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PERIODEC	OZ-FIL2	ozone filter fan (FM2) drive period (in sec)
	OZ-FIL5	ozone filter fan (FM5) drive period (in sec)
	OZ-FIL6	ozone filter fan (FM6) drive period (in sec)
	AR-FIL1	air filter fan (FM1) drive period (in sec)
	AR-FIL3	air filter fan (FM3) drive period (in sec)
	AR-FIL14	air filter fan (FM4) drive period (in sec)
	AR-FIL15	air filter fan (FM15) drive period (in sec)
	TN-FIL5	toner filter fan FM5) drive period (in sec)
	TN-FIL6	toner filter fan (FM6) drive period (in sec)
DURABLE	CLN-BLD	cleaning blade use period (in sec)
	CL-SUPS	cleaner scoop-up sheet use period (in sec)
	BS-SL-F	side seal front use period (in sec)
	BS-SL-R	side seal rear use period (in sec)
	CL-SUPS2	No. 2 scoop-up sheet use period (in sec)
	SCN-LMP	scanning lamp activation period (in sec)
	PRM-GRID	grid plate high voltage activation period (in sec)
	PR-CLN-U	primary charging wire cleaning pad (upper) execution (number of operations)
	PR-CLN-L	primary charging wire cleaning pad (lower) execution (number of operations)
	M-PU-RL	manual feed pickup roller paper passage (number of sheets)
	M-FD-RL	manual feed feed roller paper passage (number of sheet)
	M-SP-RL	manual feed separation roller paper passage (number of sheets)
	ATT-SCRP	attraction roller scraper paper passage (number of sheets)
	WST-TNR	waste toner case paper passage (number of sheets)
	CL-SFL-F	drum cleaner end felt (front) paper passage (number of sheets)
	CL-SFL-R	drum cleaner end felt (rear) paper passage (number of sheets)
	FX-WEB-U	fixing cleaning belt (upper) take-up (number of operations)
	FX-WEB-L	fixing cleaning belt (lower) take-up (number of operations)
	PRM-WIRE	primary charging wire high voltage activation period (in sec)
	TR-WIRE	transfer charging wire high voltage activation period (in sec)
	SP-WIRE	separation charging wire high voltage activation period (in sec)
	ITL-WIRE	internal static eliminator charging wire high voltage activation period (in sec)
	EXL-WIRE	external static eliminator charging wire high voltage activation period (in sec)
	CL-WRE	post-cleaning charging wire high voltage activation period (in sec)
	CLN-BLD2	No. 2 cleaning blade use period (in sec)
	ATT-BRU	attraction brush unit use period (in sec)
	TR-BRU	transfer blade unit use period (in sec)
	TRD-CLN	transfer drum cleaner use period (in sec)
	K-ROLL	polishing roller use period (in sec)

Cont'd

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TR-SHEET	transfer drum sheet paper passage (number of sheets)
SP-PU-RL	separation push-up roll paper passage (number of sheets)
FX-UP-RL	fixing upper roller paper passage (number of sheets)
FX-LW-RL	fixing lower roller paper passage (number of sheets)
OIL-APF	oil applying felt use period (in sec)
DP-PU-RL	duplexing pickup roller paper passage (number of sheets)
DP-FD-RL	duplexing feed roller paper passage (number of sheets)
DP-SP-RL	duplexing separation roller paper passage (number of sheets)
D-PFRL-F	duplexing paper feed roller (front) paper passage (number of sheets)
D-PFRL-R	duplexing paper feed roller (rear) paper passage (number of sheets)
OIL-APBL	oil applying blade use period (in sec)
FHTR-U	fixing heater (upper) drive period (in sec)
FHTR-L	fixing heater (lower) drive period (in sec)
PRE-LMP	pre-exposure lamp activation period (in sec)
PRM-UNIT	primary charging assembly high voltage activation period (in sec)
SP-UNIT	separation charging assembly high voltage activation period (in sec)
INT-UNIT	internal static eliminator high voltage activation period (in sec)
EXT-UNIT	external static eliminator high voltage activation period (in sec)
CLR-UNIT	post-cleaning charging assembly high voltage period (in sec)
C1-PU-RL	cassette 1 pickup roller paper passage (number of sheets)
C2-PU-RL	cassette 2 pickup roller paper passage (number of sheets)
C3-PU-RL	cassette 3 pickup roller paper passage (number of sheets)
C1-SP-RL	cassette 1 separation roller paper passage (number of sheets)
C2-SP-RL	cassette 2 separation roller paper passage (number of sheets)
C3-SP-RL	cassette 3 separation roller paper passage (number of sheets)
C1-FD-RL	cassette 1 feed roller paper passage (number of sheets)
C2-FD-RL	cassette 2 feed roller paper passage (number of sheets)
C3-FD-RL	cassette 3 feed roller paper passage (number of sheets)
DV-UNT-Y	Y developing assembly rotation period (in sec)
DV-UNT-M	M developing assembly rotation period (in sec)
DV-UNT-C	C developing assembly rotation period (in sec)
DV-UNT-K	Bk developing assembly rotation period (in sec)
PD-PU-RL	paper deck pickup roller paper passage (number of sheets)
PD-FD-RL	paper deck feed roller paper passage (number of sheets)

Cont'd

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PD-SP-RL	paper deck separation roller paper passage (number of sheets)
FX-IN-BS	fixing insulating bush paper passage (number of sheets)

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VIII. SELF DIAGNOSIS

A. Copier

The R-CPU and the DC-CPU of the copier's CPU PCB are equipped with a self diagnostic mechanism to check the state of the machine (particularly, the condition of sensors). The mechanism runs checks as needed, and indicates a code on the control panel when it finds a fault.

The tables that follow show codes and timing of detection, the latter with discussions of detail codes indicated in service mode (COPIER>DISPLAY>JAM/ERR).

Code	Cause	Timing of detection
E000	The discussions that follow are compiled according to detail code.	xx indicates a heater. xx=01: upper heater xx=02: lower heater
	· The fixing thermistor is faulty. · The SSR is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	xx01 The high temperature detection circuit on the DC driver PCB has detected overheating (220°C or more) in the middle of the heater.
		xx02 The thermistor (THM1/ THM3) has detected 210°C.
		xx03 The difference between the middle and ends in respect of the thermistor readings is about 50°C or more.
		xx04 The high temperature detection circuit on the DC driver PCB has detected overheating on the ends of the heater (220°C or more).
	· The fixing thermistor is faulty. · The fixing heater (H1, H2) has an open circuit. · The thermal switch (TP2, TP3) has an open circuit. · The SSR is faulty.	xx05 The open circuit detection circuit on the DC driver PCB has detected an open circuit in the heater.
		xx21 The temperature does not increase by 3°C or more in 4 min at power-on (i.e., the temperature of the fixing assembly is 100°C or less).
		xx31 The temperature does not increase by 1°C or more in 2 min at power-on (i.e., the temperature of the fixing assembly is 100°C or more, or 130°C or more).
		xx40 A temperature of 50°C or less has been detected for 1 sec or more during standby.
		xx50 A temperature of 50°C or less has been detected for 1 sec or more during copying.

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Code	Cause	Timing of detection
E004	· The SSR1 has a short circuit. · The CPU PCB is faulty.	xx indicates a heater. xx=01: upper heater xx=02: lower heater xx01 The SSR1 is on while the DC-CPU is trying to keep it off.
E005	· The cleaning belt inside the fixing assembly has been taken up for a specific length. · The fixing cleaning belt length sensor (PS11/PS67) is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0001 As many as 200 copies have been made after the fixing upper cleaning belt length sensor detected the sensor lever and indicated a warning on the control panel. 0002 As many as 200 copies have been made after the fixing lower cleaning belt length sensor detected the sensor lever and indicated a warning on the control panel.
E008	· The fixing oil pump driver PCB is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0000 The fixing oil pump driver PCB does not generate a drive signal even when the fixing oil pump drive signal is turned on. 0001 The fixing oil pump driver PCB generates a drive signal even when the fixing oil pump drive signal is turned off.
E010	· The main motor (M4) is faulty. · The main motor drive system is subjected to an overload. · The main motor driver PCB is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	The main motor ready signal (MNMRDY) is '0' for 1 sec or more while the main motor is rotating.
E012	· The drum motor (M2) is faulty. · The drum motor drive system is subjected to an overload. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0001 Not used. 0002 The drum motor ready signal (DRMRDY) is '0' for 1 sec (4 sec during deceleration) while the drum motor is rotating.
E013	· The waste toner feedscrew lock detecting switch (SW7) is faulty. · The waste toner feedscrew is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	The waste toner feedscrew cannot rotate, and the waste toner feedscrew lock detecting switch has been pressed.
E014	· The fixing motor (M5) is faulty. · The fixing motor drive system is subjected to an overload. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0000 The motor lock signal (FXMLK) is '0' for 1 sec or more while the fixing motor is rotating.

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Code	Cause	Timing of detection
E016	· The cleaning blade reciprocating motor (M7) is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	The cleaning blade reciprocating motor driver circuit on the DC driver PCB has detected an overcurrent for 0.1 sec or more.
E017	· The duplexing motor (M14) is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	The duplexing motor clock signal (DUPMLK) is '0' for 1 sec or more while the duplexing motor is rotating.
E020	The discussions that follow are compiled according to detail code.	Toner Concentration Fault xx indicates the color of a developing assembly. xx=00: MCYBk in common xx=01: M xx=02; C xx=03: Y xx=04: Bk The notations used herein means the following: SGNL: toner concentration signal REF: concentration signal DENS: developer concentration inside developing assembly SIGG: gain value for concentration reference signal PT-REF: concentration reference signal for photosensitive drum surface PT-STG-D: reflection light intensity signal for photosensitive drum surface
	· The toner concentration sensor is faulty. · The developer inside the developing assembly is not stirred properly. · The sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated.	xx00 The connector is disconnected or there is an open circuit; the REF or SGNL level is '50' or less xx10 At time of setting initial data (as during installation), the variation of SGNL-M/C/Y levels for one concentration data sampling is '35' or more. xx11 At time of setting initial data (as during installation), the variation of REF-M/C/Y levels for one concentration data sampling is '35' or more. xx12 At time of setting initial data (as during installation), the variation of SGNL-M/C/Y levels for ten concentration data samplings is '70' or more.

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Code	Cause	Timing of detection
E020	· The toner concentration sensor is faulty. · The developer inside the developing assembly is not stirred properly. · The sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated.	xx13 At time of setting initial data (as during installation), the variation of REF-M/C/Y levels for ten concentration data samplings is '70' or more. xx14 At time of setting initial data (as during installation), the variation of PT-SIG-M/C/Y levels for one concentration data sampling is '51' or more.
	· The toner concentration sensor is faulty/soiled. · The developer inside the developing assembly is not stirred properly. · The sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated.	xx15 At time of setting initial data (as during installation), the variation of PT-REF-M/C/Y levels for one concentration data sampling is '35' or more. xx16 At time of setting initial data (as during installation), the variation of PT-SIG-M/C/Y levels for 16 concentration data samplings is '102' or more. xx17 At time of setting initial data (as during installation), the variation of PT-REF-M/C/Y levels for 16 concentration data samplings is '70' or more. xx20 At time of setting initial data (as during installation), the result of averaging samplings of SGNL-M/C/Y levels is '777' or less. xx21 At time of setting initial data (as during installation), the result of averaging samplings of REF-M/C/Y levels is '200' or less. xx22 At time of setting initial data (as during installation), the result of averaging the first sampling of PT-SIG-M/C/Y levels is '650' or less or that of PT-SIG-K levels is '100' or less. xx23 At time of setting initial data (as during installation), the result of averaging samplings of PT-REF-M/C/Y levels is '777' or less.

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Code	Cause	Timing of detection
E020	· The toner concentration sensor is faulty/ soiled. · The developer inside the developing assembly is not stirred properly. · The sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated.	xx24 At time of setting initial data (as during installation), the result of averaging five retry samplings of PT-SIG-M/ C/Y levels is '683' or less or that of PT-SIG-K levels is '305' or less. xx30 At time of setting initial data (as during installation), the result of averaging samplings of SGNL-M/C/Y levels is '859' or more. xx31 At time of setting initial data (as during installation), the result of averaging samplings of REF-M/C/Y levels is '930' or more.
	· The toner concentration sensor is faulty. · The developer inside the developing assembly is not stirred properly. · The sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated. · The window of the toner concentration sensor is soiled or scratched, or the protective sheet is soiled. · The photosensitive drum is soiled (e.g., cleaning fault).	xx32 At time of setting initial data (as during installation), the result of averaging the first sampling of PT-SIG-M/ C/Y levels is '930' or more or that of PT-SIG-K levels is '550' or more. xx33 At time of setting initial data (as during installation), the result of averaging samplings of PT-REF-M/C/Y levels is '859' or more. xx34 At time of setting initial data (as during installation), the result of averaging five retry samplings of PT-SIG-M/ C/Y levels is '749' or more or that of PT-SIG-K levels is '371' or more.

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Code	Cause	Timing of detection
E020	· The toner concentration sensor is faulty. · The developer inside the developing assembly is not stirred properly. · The sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated. · The window of the toner concentration sensor is soiled or scratched, or the protective sheet is soiled. · The photosensitive drum is soiled (e.g., cleaning fault). The backup data on the CPU PCB is faulty* or the initial settings have not been made. *Be sure to initialize the RAM of the DC-CPU and enter the values recorded on the service label.	xx40 At time of setting initial data (as during installation), gain setting cannot be performed (the level of SIGG-M/C/Y is 'E0' or more or '20H' or less). 0441 At time of setting initial data (as during installation), gain setting cannot be performed (the level of RGAIN-K is 'E0' or more or '20H' or less). xx50 During copying sequence, gain setting cannot be performed because of an error in the memory backup data (the level of SIGG-M/C/Y is 'E0' or more or '20H' or less). 0451 During copying sequence, gain setting cannot be performed because of an error in the memory backup data (the level of RGAIN-K is 'E0' or more or '20H' or less). xx60 During copying sequence, the level of SGNL-M/C/Y set initially is '777' or less because of an error in the memory backup data. xx61 During copying sequence, the level of REF-M/C/Y set initially is '200' or less because of an error in the memory backup data. xx62 During copying sequence, the level of PT-REF-M/C/Y set initially is '777' or less because of an error in the memory backup data.

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Code	Cause	Timing of detection
E020	The backup data on the CPU PCB is faulty* or the initial settings have not been made. *Be sure to initialize the RAM of the DC-CPU and enter the values recorded on the service label.	xx63 During copying sequence, the level of PT-SIG-M/C/Y is '683' or less or that of PT-SIG-K is '305' or less because of an error in the memory backup data. xx64 During copying sequence, the level of PT-REF-D is '777' or less because of an error in the memory backup data. xx65 During copying sequence, the level of PT-SIG-D is '573' or less because of an error in the memory backup data. xx66 During copying sequence, the level of D-M-TRGT/D-C-TRGT/D-Y-TRGT (developer target value) is '700' or less because of an error in the memory backup data. xx70 During copying sequence, the level of SGNL-M/C/Y set initially is '859' or more because of an error in the memory backup data. xx71 During copying sequence, the level of REF-M/C/Y set initially is '930' or more because of an error in the memory backup data. xx72 During copying sequence, the level of PT-REF-M/C/Y/K set initially is '859' or more because of an error in the memory backup data. xx73 During copying sequence, the level of PT-SIG-M/C/Y set initially is '749' or more or that of PT-SIG-K is '371' or more because of an error in the memory backup data. xx74 During copying sequence, the level of PT-REF-D set initially is '859' or more because of an error in the memory backup data. xx75 During copying sequence, the level of PT-SIG-D set initially is '655' or more because of an error in the memory backup data.

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Code	Cause	Timing of detection
E020	The backup data on the CPU PCB is faulty* or the initial settings have not been made. *Be sure to initialize the RAM of the DC-CPU and enter the values recorded on the service label. The developer has deteriorated. · The developing cylinder fails to rotate. · The developing assembly is not locked. · The toner concentration (patch detection) sensor is faulty. · The developer inside the developing assembly is faulty. · The toner level sensor is faulty. · The concentration sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated.	xx76 During copying sequence, the level of D-M-TRGT/D-C-TRGT/D-Y-TRGT (developer target value) is '930' or more because of an error in the memory backup data. xx80 When samplings are taken during copying sequence, the level of WINDOW-M/C/Y/K (window soiling correction coefficient) is '130' or more. xx81 When samplings are taken during copying sequence, the level of WINDOW-M/C/Y/K (window soiling correction coefficient) is '70' or less. xx90 When samplings are taken during copying sequence, the variation of SGNL-M/C/Y levels is '102' or more. xx91 When samplings are taken during copying sequence, the variation of REF-M/C/Y levels is '102' or more. xxA0 When samplings are taken during copying sequence, the level of SGNL-M/C/Y is '306' or less. xxA1 When samplings are taken during copying sequence, the level of REF-M/C/Y set initially decreases (intensity) by 30% or more. xxA2 When samplings are taken during copying sequence, the level of PT-SIG-K is '51' or less. xxB0 When samplings are taken during copying sequence, the level of SGNL-M/C/Y is '1020' or more (when feeding 10 sheets or more continuously). xxB1 When samplings are taken during copying sequence, the level of REF-M/C/Y set initially increases (intensity) by '30%' or more.

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Code	Cause	Timing of detection
E020	The developer has deteriorated. · The developing cylinder fails to rotate. · The developing assembly is not locked. · The toner concentration (patch detection) sensor is faulty. · The developer inside the developing assembly is faulty. · The toner level sensor is faulty. · The concentration sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated.	xxB2 When samplings are taken during copying sequence, the level of PT-SIG-M/C/Y is '1020' or more and that of PT-SIG-K is '550' or more. xxC0 When samplings are taken during copying sequence, the level of DENS-M/C/Y/K is '+3%' (when feeding 20 sheets continuously). xxD0 When samplings are taken during copying sequence, the level of DENS-M/C/Y/K is '+3%' (when feeding 20 sheets or more continuously).
	· The developer has deteriorated. · The developing cylinder fails to rotate. · The developer is not locked. · The toner concentration sensor is faulty. · The developer inside the developing assembly is not stirred properly. · The toner level sensor is faulty. · The sensor is subjected to stray light (no cover, front cover open). · The photosensitive drum has deteriorated, or the toner level sensor is faulty.	xxE0 When samplings are taken during copying sequence, the level of DENS-M/C/Y/K has exceeded '-5%'.
	· The hopper motor is faulty. · The hopper motor has an open circuit.	00FF After the hopper motor has turned on, the hopper motor lock signal (HOPMLK) is '0' for 0.1 sec or more. xxFF After the hopper motor has turned on, the hopper motor lock signal (HOPMLK) is '0' for 0.1 sec or more (the toner supply clutch is on).

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Code	Cause	Timing of detection
E021	· The developing locking motor (PM1, PM2, PM3, PM4) is faulty. · The developing assembly HP sensor (PS49, PS51, PS53, PS55) is faulty. · The developing locking driver PCB is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0100 When the power switch is on, the M developing assembly HP sensor is '0'. 0200 When the power switch is on, the C developing assembly HP sensor is '0'. 0300 When the power switch is on, the Y developing assembly HP sensor is '0'. 0400 When the power switch is on, the Bk developing assembly HP sensor is '0'. 0101 When the developing assembly is locked, the M developing assembly HP sensor is '1'. 0201 When the developing assembly is locked, the C developing assembly HP sensor is '1'. 0301 When the developing assembly is locked, the Y developing assembly HP sensor is '1'. 0401 When the developing assembly is locked, the Bk developing assembly HP sensor is '1'.
E040	· The lifter motor drive system is subjected to an overload. · The lifter motor (M11, M12/DM12, M13/DM13, M15) is faulty. · The CPU PCB is faulty.	0001 When the cassette 1 lifter motor is on, an overcurrent is detected in the motor. 0002 When the cassette 2 (for CLC1150, cassette 1) lifter motor is on, an overcurrent is detected in the motor. 0003 When the cassette 3 (for CLC1150, cassette 2) lifter motor is on, an overcurrent is detected in the motor. 0004 When the multifeeder lifter motor is on (lifter is moving up), an overcurrent is detected in the motor. 0005 When the multifeeder lifter motor is on (lifter is moving down), an overcurrent is detected in the motor.

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Code	Cause	Timing of detection
E041	· The deck lifter motor (M101) is faulty. · The deck lifter position sensor (PS104) is faulty. · The deck lifter cable is broken. · The deck driver PCB is faulty.	The deck lifter position sensor cannot detect the deck lifter even when the deck lifter UP signal has been kept on for a specific period of time.
E051	· The duplexing paper jogging guide motor (PM14) is faulty. · The duplexing paper jogging guide HP sensor (PS40) is faulty. · The duplexing driver PCB is faulty. · The CPU PCB is faulty.	0000 The paper jogging guide HP sensor does not go '0' when the paper jogging motor has been kept on for a specific period of time. 0001 The paper jogging guide HP sensor does not go '1' when the paper jogging guide motor has been kept on for a specific period of time.
E061		Potential Control-Related Error VDI: potential during initial rotation Vd3: post-cleaning charging area during dark area attenuation potential measurement offset value: value determined in service mode (FUNCTION>DPC>OFST) xx indicates the color of a developing assembly. xx=01: M xx=02: C xx=03: Y xx=04: Bk
	· The potential sensor is faulty.	0000 All Vd/VL is 10 V or less. 0001 The offset value is not 100 ± 50.
	· The pre-exposure lamp is faulty.	0010 VL3 is 200 V or less.
	· The primary high-voltage output is faulty.	0020 Vd1/Vd2/VdI is 30V or less.
	· The grid bias is absent.	0030 Vd1/Vd2/VdI is 100 V or less.
	· The grid bias is not controlled properly.	0031 VdI/Vd2/VdI is 900 V or more.
	· The grid bias output is faulty.	0032 The difference between Vd1 and Vd2 is 100 V or less.
	· The post-cleaning charging output is faulty.	0040 Vd3 is 100 V or less.
	· The laser emission is faulty. · The bending mirror is faulty. · The laser shutter is faulty.	0050 The difference between Vd1 and VL1 is 30 V or less and, in addition, Vd1 is 350 V or more; or, the difference between Vd2 and VL2 is 30 V or less and, in addition, Vd2 is 550 V or more.

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Code	Cause	Timing of detection
E061	· The laser is faulty.	0051 Vd1 is 300 V or less and, in addition, Vd2 is 500 V or less.
	· The laser light is inadequate. · The bending mirror is faulty. · The laser shutter is faulty.	0052 VL1 is 200 V or more and, in addition, VL2 is 250 V or more.
	· The laser is faulty.	0053 Vd1 is 100 V or less and, in addition, is 150 V or less.
	· The dark area potential attenuation is at the upper control limit.	0060 The dark are potential attenuation value is 150 V or more.
	· The grid bias is at the upper control limit.	0070 The grid bias output value is 900 V or more.
	· The grid bias is at the lower control limit.	0071 The grid bias output value is 100 V or less.
	· The developing bias is at the upper control limit.	xx80 The developing bias output value is 700 V or more.
	· The developing bias is at the lower control limit.	xx81 The developing bias output value is 200 V or less.
	· Vd1 is at the upper measurement limit. · The photosensitive drum has deteriorated.	0090 Vd1 is 700 V or more.
	· Vd1 is at the lower measurement limit.	0091 Vd1 is 400 V or less.
	· VL1 is at the upper measurement limit.	0092 VL1 is 200 V or more.
	· VL1 is at the lower measurement limit.	0093 VL1 is 10 V or less.
	· Vd2 is at the upper measurement limit.	0094 Vd2 is 900 V or more.
	· Vd1 is at the lower measurement limit.	0095 Vd1 is 550 V or less.
	· VL1 is at the upper measurement limit.	0096 VL2 is 250 V or more.
	· VL2 is at the lower measurement limit.	0097 VL2 is 50 V or less.

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Code	Cause	Timing of detection
E062	· SSR2 has a short circuit. · The CPU PCB is faulty.	While the DC-CPU keeps the cassette heater/drum heater SSR2 off, SSR2 is on.
E067	· The separation charging assembly is faulty. · The internal/external static eliminator is faulty. · The HVT-AC PCB is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	An error signal (AC-ERR*=0) has been generated by the HVT-PCB.
E071	· The side A sensor (PS2) is faulty. · The side B sensor (PS3) is faulty. · The C sensor (PS4) is faulty. · The signal plate is faulty. · The drum motor drive system is subjected to an overload. · The transfer drum is not locked properly. · The DC driver PC is faulty. · The CPU PCB is faulty.	F000 The side A sensor, side B sensor, or C sensor does not detect the signal plate within 10 sec after the operation to lock the transfer drum has started. 0001 There is an error in the falling edge timing of the signal plate detected by the side B sensor. 0002 There is an error in the rising edge timing of the signal plate detected by the side B sensor. 0003 There is an error in the rising edge timing of the signal plate detected by the C sensor. 0004 There is an error in the falling edge timing of the single plate C detected by the C sensor. 0005 There is an error in the rising edge timing of the signal plate detected by the side A sensor. 0006 There is an error in the falling edge timing of the signal plate detected by the side A sensor. 0007 There is an error in the rising edge timing of the signal plate D detected by the C sensor. 0008 There is an error in the falling edge timing of the signal plate D detected by the C sensor. 1001 The falling edge signal of the signal plate to be detected by the side B sensor is not generated after the falling edge signal of the signal plate D detected by the C sensor has been generated.

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Code	Cause	Timing of detection
E071	· The side A sensor (PS2) is faulty. · The side B sensor (PS3) is faulty. · The C sensor (PS4) is faulty. · The signal plate is faulty. · The drum motor drive system is subjected to an overload. · The transfer drum locking mechanism is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	1002 The rising edge signal of the signal plate to be detected by the side B sensor is not generated after the rising edge signal of the signal plate C detected by the C sensor has been generated. 1003 The rising edge signal of the signal plate C to be detected by the C sensor is not generated after the falling edge of the signal plate detected by the side B sensor has been generated. 1004 The falling edge signal of the signal plate C to be detected by the C sensor is not detected after the rising edge of the signal plate detected by the side B sensor has been generated. 1005 The rising edge signal of the signal plate to be detected by the side A sensor is not generated after the falling edge of the signal plate C detected by the C sensor has been generated. 1006 The falling edge signal of the signal plate to be detected by the side A sensor is not generated after the rising edge of the signal plate D detected by the C sensor has been generated. 1007 The rising edge signal of the signal plate D to be detected by the C sensor is not generated after the rising edge signal of the signal plate detected by the side A sensor has been generated. 1008 The rising edge signal of the signal plate D to be detected by the C sensor is not generated after the falling edge signal of the signal plate detected by the side A sensor has been generated.

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Code	Cause	Timing of detection
E071	· The side A sensor (PS2) is faulty. · The side B sensor (PS3) is faulty. · The C sensor (PS4) is faulty. · The signal plate is faulty. · The drum motor drive system is subjected to an overload. · The transfer drum locking mechanism is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	1101 The falling edge signal of the signal plate to be detected by the side B sensor is generated 0.3 sec earlier after the falling edge signal of the signal plate D detected by the C sensor has been generated. 1102 The rising edge signal of the signal plate to be detected by the side B sensor is generated 0.3 sec earlier after the rising edge signal of the signal plate C detected by the C sensor has been generated.
	· Side A sensor (PS2) is faulty. · Side B sensor (PS3) is faulty. · The C sensor (PS4) is faulty. · The signal plate is faulty. · The drum motor drive system is subjected to an overload. · The transfer drum is not locked properly. · The DC driver PCB is faulty. · The CPU PCB is faulty.	1103 The rising edge signal of the signal plate C to be detected by the C sensor is generated 0.3 sec earlier after the falling edge signal of the signal plate detected by the side B sensor has been generated. 1104 The falling edge signal of the signal plate C to be detected by the C sensor is generated 0.3 sec earlier after the rising edge signal of the signal plate detected by the side B sensor has been generated. 1105 The rising edge of the signal plate to be detected by the side A sensor is generated 0.3 sec earlier after the falling edge signal of the signal plate C detected by the C sensor has been generated. 1106 The falling edge signal of the signal plate to be detected by the side A sensor is generated 0.3 sec earlier after the rising edge signal of the signal plate D detected by the C sensor has been generated. 1107 The rising edge signal of the signal plate D to be detected by the C sensor is generated 0.3 sec earlier after the rising edge of the signal l plate to be detected by the side A sensor has been generated.

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Code	Cause	Timing of detection
E071	· Side A sensor (PS2) is faulty. · Side B sensor (PS3) is faulty. · The C sensor (PS4) is faulty. · The signal plate is faulty. · The drum motor drive system is subjected to an overload. · The transfer drum is not locked properly. · The DC driver PCB is faulty. · The CPU PCB is faulty.	1108 The rising edge signal of the signal plate D to be detected by the C sensor is generated 0.3 sec earlier after the falling edge signal of the signal plate detected by the side A sensor has been generated. 1201 The falling edge signal of the signal plate to be detected by the side B sensor is generated 0.3 sec later after the falling edge signal of the signal plate D detected by the C sensor has been generated. 1202 The rising edge signal of the signal plate to be detected by the side B sensor is generated 0.3 sec later after the rising edge signal of the signal plate C detected by the C sensor has been generated. 1203 The rising edge signal of the signal plate C to be detected by the C sensor is generated 0.3 sec later after the falling edge signal of the signal plate detected by the side by side B sensor has been generated.
	· The side A sensor (PS2) is faulty. · The side B sensor (PS3) is faulty. · The C sensor (PS4) is faulty. · The signal plate is faulty. · The drum motor drive system is subjected to an overload. · The transfer drum is not locked properly. · The DC driver PCB is faulty. · The CPU PCB is faulty.	1204 The falling edge signal of the signal plate C to be detected by the C sensor is generated 0.3 sec later after the rising edge signal of the signal plate detected by the side B sensor has been generated. 1205 The rising edge signal of the signal plate to be detected by the side A sensor is generated 0.3 sec later after the falling edge signal of the signal plate C detected by the C sensor has been generated. 1206 The falling edge signal of the signal plate to be detected by the side A senor is generated 0.3 sec later after the rising edge signal of the single plate D detected by the C sensor has been generated.

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Code	Cause	Timing of detection
E071	· The side A sensor (PS2) is faulty. · The side B sensor (PS3) is faulty. · The C sensor (PS4) is faulty. · The signal plate is faulty. · The drum motor drive system is subjected to an overload. · The transfer drum is not locked properly. · The DC driver PCB is faulty. · The CPU PCB is faulty.	1207 The rising edge signal of the signal plate D to be detected by the C sensor is generated 0.3 sec later after the rising edge signal of the signal plate detected by the side A sensor has been detected. 1208 The rising edge signal of the signal plate to be detected by the C sensor is generated 0.3 sec later after the falling edge signal of the signal plate detected by the side A sensor has been generated.
E072	· The transfer drum cleaner brush motor (M8) is faulty. · The polishing roller motor (M9) is faulty. · The motor drive system is subjected to an overload. · The attraction/transfer locking cam motor (PM7) is faulty. · The attraction/transfer locking cam HP sensor (PS8) is faulty. · The registration path driver PCB is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0002 The motor lock signal (TRCMLK) is '0' for 1 sec or more while the transfer drum cleaner brush motor is rotating. 0003 An overcurrent is detected for 1 sec or more while the polishing roller motor is rotating. 0202 The attraction/transfer looking cam HP sensor does not go '1' within 4 sec after the attraction/transfer locking cam motor has started to rotate.

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Code	Cause	Timing of detection
E073	· The transfer unit drawer connector is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0001 During copying operation, the connection signal (CONNECT) of the transfer unit lever goes '0'. 0002 During copying operation, the connection signal (CONNECT) of the drawer connector of the transfer unit is '0'.
E074	· The transfer drum locking motor (PM5) is faulty. · The transfer drum HP sensor (PS57) is faulty. · The transfer locking driver PCB is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0000 The transfer drum HP sensor does not go '1' when the transfer drum locking motor has been kept on for a specific period of time. 0001 The transfer drum HP sensor does not go '0' when the transfer drum locking motor has been kept on for a specific period of time.
E079	· The transfer drum cleaner HP sensor (PS59) is faulty. · The transfer locking driver PCB is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0000 The transfer drum cleaner HP sensor does not go '1' when the transfer drum cleaner locking motor has been kept on for a specific period of time. 0001 The transfer drum cleaner HP sensor does not go '0' when the transfer drum cleaner locking motor has been kept on for a specific period of time.
E100	· The laser unit is faulty. · The laser driver PCB is faulty. · The laser controller PCB is faulty. · The CPU PCB is faulty.	The BD signal cannot be detected for 1 sec or more when potential control operation starts.
E110	· The laser scanner motor (M3) is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	0000 The laser scanner motor ready signal (LSMRDY) is '1' for 0.5 sec or more while the laser scanner motor is rotating.
E120	· The laser controller unit (laser thermistor, laser heater, laser controller PCB) is faulty. · The CPU PCB is faulty.	0001 The laser heater temperature has exceeded 60°C. 0002 When the machine internal temperature is 20°C or more, the laser heater does not reach a specific temperature within 20 min.
E190	· The laser controller PCB is faulty. · The CPU PCB is faulty.	An error has occurred while wiring data to the laser controller PCB from the CPU PCB at power-on.

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Code	Cause	Timing of detection
(E202) No code indication; keys are disabled.	· The original scanner HP sensor (PS1) is faulty. · The original scanner motor (PM15) is faulty. · The original scanner motor driver PCB is faulty. · The CPU PCB is faulty.	The original scanner home position signal (SCHP) is not generated within 10 sec after the power switch has been turned on or the Copy Start key has been pressed.
E208	· The DC power supply to the original scanner motor driver PCB is faulty. · The wiring or connectors are faulty. · The original scanner motor driver PC is faulty. · The CPU PCB is faulty.	The communication between the original scanner driver PCB and the CPU PCB is interrupted or 5 sec or more.
E220	· The scanning is faulty. · The lamp regulator PCB is faulty.	During standby, the scanning lamp turns on even though the R-CPU keeps the scanning lamp ON signal off. During copying, the scanning lamp turns off even though the R-CPU keeps the scanning lamp ON signal on.
E305	· The IP-MAIN PCB is faulty. · The IP-PRJ PCB is faulty. · The IP-ED PCB is faulty.	At power-on, RAM access within the IP-MAIN PCB does not take place normally. RAM access within the IP-PRJ PCB or IP-ED PCB does not take place normally. (For E305, the code is indicated when copying is started in projector mode or area select mode.) 0001 BD error (same as E100) 0002 concentration conversion RAM error 0004 B shading correction RAM error 0008 G shading correction RAM error 0010 R shading correction RAM error 0020 color correction RAM error 0040 original scanner motor error 0100 IP-ED PCB RAM error or disconnection 0400 IP-PRJ PCB RAM error or disconnection 0800 IP-IF PCB RAM error 1000 IP-IF PCB RAM error

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Code	Cause	Timing of detection
E351	· The IP-MAIN PCB is faulty. · The IP-ECO PCB is faulty. · The connection between IP-MAIN, IP-ECO PCB, and laser driver PCB is faulty.	The IP-ECO PCB and the IP-MAIN PCB are not connected. The IP-ECO PCB and its ROM are a poor match.
E620	· The IP-ED PCB is faulty. · The IP-MAIN PCB is faulty.	The communication between IP-ED-PCB and IP-MAIN PCB is interrupted for 5 sec or more.
E634	· The projector lamp is faulty. · The projector thermal switch is faulty.	The LAOFF signal remains '0' when the projector controller PCB turns on the LCNT signal.
E700	· The CPU PCB is faulty. · The DC power supply is faulty.	The communication between the DC-CPU and the R-CPU on the CPU PCB is interrupted for 5 sec or more.
E717	· An error has occurred in conjunction with the copy data controller/remote diagnosis device.	The copy data controller or the remote diagnostic device has been physically detached.
E718	· The IP-PRJ PCB is faulty. · The IP-MAIN PCB is faulty. · The projector controller PCB is faulty.	The communication between the projector controller PCB and the IP-MAIN PCB is interrupted for 5 sec or more.
E800	· The power switch is faulty. · The DC harness is faulty. · The DC driver PCB is faulty. · The CPU PCB is faulty.	An open circuit has been detected in the auto shut-off signal.
E804	· The operation of a fan (indicated by detail code) is faulty. · The CPU PCB is faulty. · The DC driver PCB is faulty.	0001 The electrical unit fan (FM8) has stopped to rotate in error. 0002 The IP cooling fan (FM7) has stopped to rotate in error. 0003 The exhaust fan (FM2) has stopped to rotate in error. 0004 The ozone suction fan (FM5) has stopped to rotate in error. 0005 The toner suction fan (FM6) has stopped to rotate in error. 0006 The laser scanner motor cooling fan (FM4) has stopped to rotate in error. 0008 The primary charging assembly fan (FM3) has stopped to rotate in error. 0009 The delivery cooling fan (FM11) has stopped to rotate in error. 000A The back suction fan (FM16) has stopped to rotate in error.

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Code	Cause	Timing of detection
E804	· The operation of a fan (indicated by detail code) is faulty. · The CPU PCB is faulty. · The DC driver PCB is faulty.	000B The power supply cooing fan 1/2 (FM9/FM13) has stopped in error. 000C The power supply cord base fan (FM17) has stopped to rotate in error. 0102 The original exposure system cooling fan 2/3 (FM14/FM15) has stopped to rotate in error.

Caution:

1. The copier may be reset by turning its power switch off and then on when its self diagnostic mechanism has turned on. This, however, does not apply to E000, E004, E005, E008, E020 (if xxE0), or E717. This is to prevent possible damage by an overheating fixing roller occurring if these errors were designed to be reset while the thermistor has an open circuit.
2. If E005 (no cleaning belt) is indicated, replace the cleaning belt, and be sure to reset the fixing cleaning belt counter in service mode (COPIER>COUNTER>MISC>FIX-WEB).

Resetting E000, E004, E005, E008, E020, or E717

1) Start service mode, and select COPIER>FUNCTION>CLEAR>ERR (to highlight).
2) Press the OK key.
3) Turn off and then on the power switch.

E717

E717 may be prevented by temporarily disconnecting the communication line using service mode as follows before disconnecting the copy data controller or the remot diagnostic device connected to the copier:

1) Start service mode, and select COPIER>OPTION>IN-FACE>B-CLR (to highlight).
2) Enter '0', and press the OK key.
3) End service mode, and perform appropriate servicing.

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B. RDF

Note:
If the self diagnostic mechanism has turned on, you can reset the machine by turning the copier's power switch off and then on.
If you want to continue to make copies while the RDF is out of order, place the original on the copyboard glass after lifting the RDF.

Code	Cause	Timing of detection
E400	· The communication of data with the copier is faulty.	The communication is monitored at all times, and it is interrupted for 5 sec or more.
E401	· The pickup motor (M1) is faulty. · The pickup roller home position sensor 1 (S8) is faulty.	The state of the sensor remains unchanged after the pickup motor has been driven for 2 sec or more.
E402	· The belt motor (M3) is faulty. · The belt motor clock sensor (S11) is faulty.	The number of belt motor clock pulses is lower than a specific value for 100 msec.
E403	· The reversal motor (M2) is faulty. · The slip sensor (S10) is faulty.	The number of slip clock pulses is lower than a specific value for 100 msec.
E404	· The delivery motor (M5) is faulty. · The delivery motor clock sensor (S12) is faulty.	The number of delivery motor clock pulses is lower than a specific value for 200 msec.
E405	· The pickup motor (M1) is faulty. · The pickup motor clock sensor (S12) is faulty.	The number of pickup motor clock pulses is lower than a specific value for 200 msec.
E407	· The tray drive motor (M6) is faulty. · The tray position sensor (S25) is faulty.	The state of the sensor remains unchanged after the tray drive motor has been driven for 2 sec or more.
E408	· The feeder motor (M8) is faulty. · The tray position sensor (S25) is faulty.	The number of feed motor clock pulses is lower than a specific value for 100 msec.
E411	· The registration sensor 1 (S3) is faulty. · The skew sensor 1 (S4) is faulty. · The manual feed registration sensor (S19) is faulty. · The image leading edge sensor (S20) is faulty. · The original sensor 1 (S7) is faulty.	The output of each sensor is a specific value or more in the absence of paper.

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C. Sorter

Code	Cause	Timing of detection
E510	· The feed motor (M1) fails to rotate.	The clock signal from the feed motor clock sensor (PI5) is absent for 250 msec.
E516	· The low-speed feed motor (M10) fails to rotate.	The clock signal from the feed motor clock sensor (PI23) is absent for 250 msec or more.
E517	· The home position of the buffer path unit locking cam cannot be detected.	The home position cannot be detected within a specific period of time (varying from copier to copier) after the Copy Start key has been pressed.
E522	· The push bar motor (M7) fails to rotate.	The operation fails to end within 2000 msec after the motor drive signal has been generated.
E523	· The reference wall motor (M6) fails to rotate.	The operation does not end within 2000 msec after the motor drive signal has been generated.
E524	· The multi guide motor (M5) fails to rotate.	The operation does not end within 2000 msec after the motor drive signal has been generated.
E525	· The bin internal paper sensor 1 (S3, S4) auto adjustment mechanism is faulty.	The auto adjustment mechanism of the bin internal paper sensor 1 (S3, S4) fails, or an error occurs in the auto adjustment value.
E526	· The bin internal paper sensor 2 (S6, S7) auto adjustment mechanism is faulty.	The auto adjustment mechanism of the bin internal paper sensor 2 (S6, S7) fails, or an error occurs in the auto adjustment value.
E530	· The guide bar motor (M8) fails to rotate.	The operation does not end within a specific period of time after the motor drive signal has been generated. · for front access, 5000 msec · except front access, 2000 msec
E531	· The stapler unit drive motor (M4) fails to rotate.	The operation does not end within 2000 msec after the motor drive signal output has been generated. The clock signal from the motor clock sensor (PI8) is absent for 250 msec or more. The input signal from the swing home position sensor (PI9) remains unchanged for 1000 msec.

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Code	Cause	Timing of detection
E532	· The stapler unit shift motor (M3) fails to rotate.	The operation does not end within 5000 msec after the motor drive signal has been generated.
E533	· The stapler internal paper sensor auto adjustment mechanism is faulty.	The auto adjustment mechanism of the stapler internal paper sensor fails, or an error occurs in the auto adjustment value.
E540	· The bin shift motor (M9) fails to rotate.	The operation fails to end within a specific period of time after the motor drive signal has been generated. · for initialization, 20000 msec · except initialization, 2000 msec The clock plate sensor of the motor does not generate clock signals for 250 msec. The input signal from the lead cam position sensor (PI20) remains unchanged for 2000 msec.
E550	· The DC output from the sorter controller PCB is faulty.	An error has occurred in the DC output (24 VL, 24 VP) from the sorter controller PCB.

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APPENDIX

A. GENERAL TIMING CHART A-1
B. SIGNALS AND ABBREVIATIONS A-3
C. GENERAL CIRCUIT DIAGRAM A-9
D. PAPER DECK GENERAL CIRCUIT DIAGRAM A-13
E. SPECIAL TOOLS A-15
F. SOLVENTS AND OILS A-17

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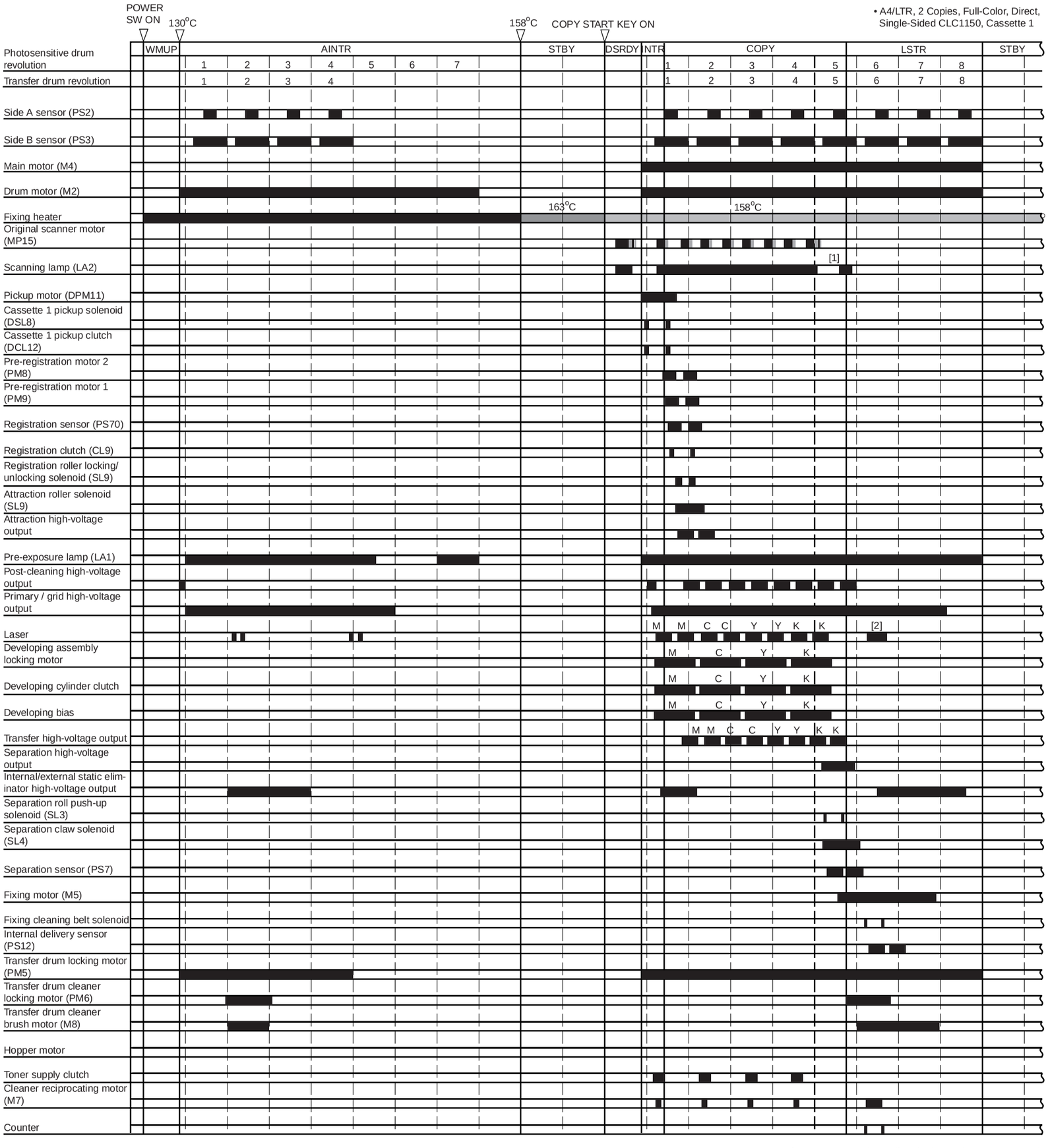
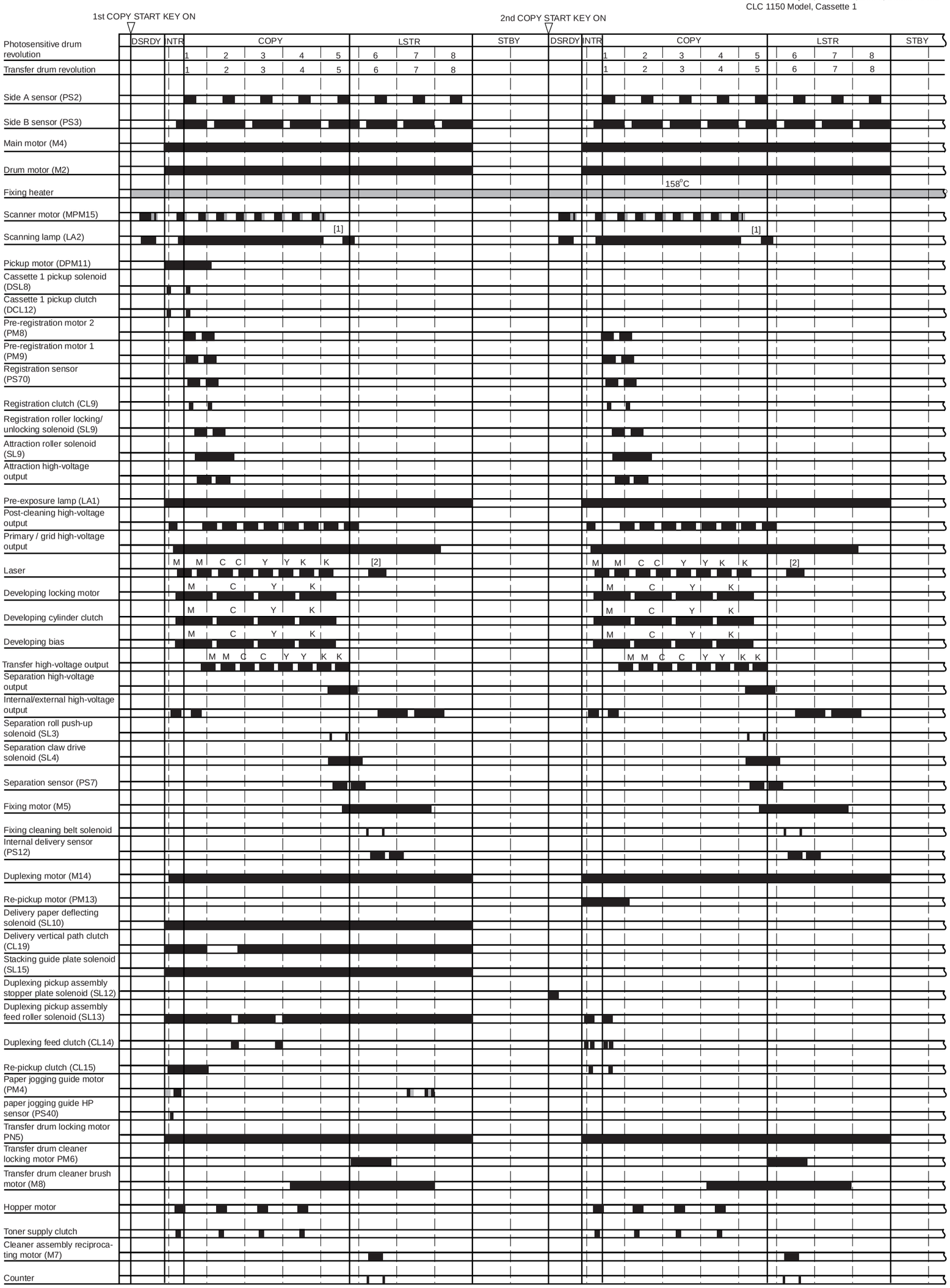
A. GENERAL TIMING CHART



[1] shading correction. [2] potential control measurement.

• A4/LTR, 2 Copies, Full-Color, Direct, Double-Sided
CLC 1150 Model, Cassette 1



[1] shading correction [2] potential control measurement.

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B. SIGNALS AND ABBREVIATIONS

1. Signals

400*	LASER SELECT command
AC-ERR*	HIGH VOLTAGE TRANSFORMER AC ERROR signal
ACSBY	AC STANDBY command
AITOP	A-SIDE SENSOR signal
APCHOLD	AUTO POWER CONTROL HOLD command
BD	BEAM DETECT signal
BITOP	B-SIDE SENSOR signal
BK-REF	BK-REFERENCE signal
BK-SGNL	BK-TONER DENSITY signal
BKTEP	BK-TONER EMPTY signal
BLRMA	ATTRACTION/TRANSFER PRESSURE CAM MOTOR command
BLRMA*	ATTRACTION/TRANSFER PRESSURE CAM MOTOR command
BLRMB	ATTRACTION/TRANSFER PRESSURE CAM MOTOR command
BLRMB*	ATTRACTION/TRANSFER PRESSURE CAM MOTOR command
BLRMHL	ATTRACTION/TRANSFER PRESSURE CAM MOTOR HOLD command
BLRMHP	ATTRACTION/TRANSFER PRESSURE CAM HOME POSITION SENSOR signal
C-REF	C-REFERENCE signal
C-SGNL	C-TONER DENSITY signal
C1LFD	CASSETTE-1 LIFTER SENSOR signal
C1LFMON	CASSETTE-1 LIFTER MOTOR ON command
C1PAD	CASSETTE-1 PAPER SENSOR signal
C1PLVR	CASSETTE-1 PAPER LEVEL VR signal
C1PUCL	CASSETTE-1 PICK-UP CLUTCH command
C1PUMA	CASSETTE-1 PICK-UP MOTOR command
C1PUMA*	CASSETTE-1 PICK-UP MOTOR command
C1PUMB	CASSETTE-1 PICK-UP MOTOR command
C1PUMB*	CASSETTE-1 PICK-UP MOTOR command
C1PUMHL	CASSETTE-1 PICK-UP MOTOR HOLD command
C2LFD/D1LFD	CASSETTE-2/1 LIFTER SENSOR signal
C2LFMON	CASSETTE-2/1 LIFTER MOTOR ON command
C2PAD/D1PAD	CASSETTE-2/1 PAPER SENSOR signal
C2PLVR/D1PLVR	CASSETTE-2/1 PAPER LEVEL VR signal
C2PUCL/D1PUCL	CASSETTE-2/1 PICK-UP CLUTCH command
C2PUMA/D1PUMA	CASSETTE-2/1 PICK-UP MOTOR command
C2PUMA*/D1PUMA*	CASSETTE-2/1 PICK-UP MOTOR command
C2PUMB/D1PUMB	CASSETTE-2/1 PICK-UP MOTOR command
C2PUMB*/D1PUMB*	CASSETTE-2/1 PICK-UP MOTOR command
C2PUMHL/D1PUMHL	CASSETTE-2/1 PICK-UP MOTOR HOLD command
C2PWVR	CASSETTE-2 PAPER WIDTH VR signal
C2SZ0	CASSETTE-2 PAPER LENGTH SENSOR signal 0
C2SZ1	CASSETTE-2 PAPER LENGTH SENSOR signal 1
C3LFD/D2LFD	CASSETTE-3/2 LIFTER SENSOR signal
C3LFMON	CASSETTE-3/2 LIFTER MOTOR ON command
C3PAD/D2PAD	CASSETTE-3/2 PAPER SENSOR signal
C3PLVR/D2PLVR	CASSETTE-3/2 PAPER LEVEL VR signal

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C3PUCL/D1PUCL	CASSETTE-3/2 PICK-UP CLUTCH command
C3PUMA/D2PUMA	CASSETTE-3/2 PICK-UP MOTOR command
C3PUMA*/D2PUMA*	CASSETTE-3/2 PICK-UP MOTOR command
C3PUMB/D2PUMB	CASSETTE-3/2 PICK-UP MOTOR command
C3PUMB*/D2PUMB*	CASSETTE-3/2 PICK-UP MOTOR command
C3PUMHL/D2PUMHL	CASSETTE-3/2 PICK-UP MOTOR HOLD command
C3PWVR/D2PWVR	CASSETTE-3/2 PAPER WIDTH VR signal
C3SZ0/D3SZ0	CASSETTE-3/2 PAPER SENSOR signal 0
C3SZ1/D3SZ1	CASSETTE-3/2 PAPER SENSOR signal 1
CBRCMA	CLEANER BLADE RECIPROCATING MOTOR command A
CBRCMB	CLEANER BLADE RECIPROCATING MOTOR command B
CDEVA	C-DEVELOPING ASSEMBLY ENGAGING
CDEVA*	C-DEVELOPING ASSEMBLY ENGAGING MOTOR command C
CDEVB	C-DEVELOPING ASSEMBLY ENGAGING MOTOR command C
CDEVB*	C-DEVELOPING ASSEMBLY ENGAGING MOTOR command C
CDEVCL	C-DEVELOPING CYLINDER CLUTCH command C
CDEVHL	C-DEVELOPING ASSEMBLY ENGAGING C MOTOR HOLD command
CDEVHP	C-DEVELOPING ASSEMBLY HOME POSITION SENSOR signal C
CITOP	C SENSOR signal
CTEP	C-TONER EMPTY signal
CTNRSUP*	C-TONER SUPPLY CLUTCH command
DCFMERR	POWER SUPPLY COOLING FAN ERROR signal
DELFLSL*	DELIVERY PAPER DEFLECTOR SOLENOID command
DINPD	DUPLEXING UNIT INLET PAPER SENSOR signal
DJGHP	PAPER JOGGING GUIDE HOME POSITION SENSOR signal
DJOGMA	DUPLEXING UNIT PAPER JOGGING GUIDE MOTOR command
DJOGMA*	DUPLEXING UNIT PAPER JOGGING GUIDE MOTOR command
DJOGMB	DUPLEXING UNIT PAPER JOGGING GUIDE MOTOR command
DJOGMB*	DUPLEXING UNIT PAPER JOGGING GUIDE MOTOR command
DLCOVD	DELIVERY COVER OPEN SENSOR signal
DLFMERR	DELIVERY COOLING FAN ERROR signal
DLFMON	DELIVERY COOLING FAN ON command
DLVP1D	DELIVERY VERTICAL PATH-1 SENSOR signal
DLVP2D	DELIVERY VERTICAL PATH-2 SENSOR signal
DREPD	DUPLEXING UNIT REVERSAL PAPER SENSOR signal
DRHERR	DRUM HEATER ERROR signal
DRHOFF	DRUM HEATER OFF command
DRMCLK	DRUM MOTOR CLOCK signal
DRMCW	DRUM MOTOR ROTATIONAL DIRECTION signal
DRMFG	DRUM MOTOR FG signal
DRMON	DRUM MOTOR ON command
DRMRDY	DRUM MOTOR READY signal
DRMSP0	DRUM MOTOR SPEED CONTROL signal 0
DRMSP1	DRUM MOTOR SPEED CONTROL signal 1
DUPFDCL*	DUPLEXING UNIT FEEDER CLUTCH command
DUPMLK	DUPLEXING UNIT MOTOR LOCK signal
DUPMON	DUPLEXING UNIT MOTOR command
DUPPFSL*	DUPLEXING UNIT PAPER FEEDING ROLLER SOLENOID command
DUPPPD	DUPLEXING UNIT PATH PAPER SENSOR signal
DUPSAPD	DUPLEXING UNIT TRAY PAPER SENSOR signal
DUPUMA	DUPLEXING UNIT PICK-UP MOTOR command
DUPUMA*	DUPLEXING UNIT PICK-UP MOTOR command

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DUPUMB	DUPLEXING UNIT PICK-UP MOTOR command
DUPUMB*	DUPLEXING UNIT PICK-UP MOTOR command
DUPUMHL	DUPLEXING UNIT PICK-UP MOTOR HOLD command
DVERPCL	DELIVERY VERTICAL PATH CLUTCH command
ENDPLSL*	DUPLEXING UNIT STACK GUIDE SOLENOID command
EXFMERR	EXHAUST FAN ERROR signal
EXFMON	EXHAUST FAN ON command
FDC1D	CASSETTE-1 OPEN SENSOR signal
FDC2D/FDD1D	CASSETTE-2/1 OPEN SENSOR signal
FDC3D/FDD2D	CASSETTE-3/2 OPEN SENSOR signal
FDCOVD	PICK-UP ASSEMBLY COVER OPEN SENSOR signal
FXMLK	FIXING MOTOR LOCK signal
FXMON	FIXING MOTOR ON command
FXMSP0	FIXING MOTOR SPEED CONTROL signal 0
FXMSP1	FIXING MOTOR SPEED CONTROL signal 1
FXOILD	FIXING OIL LEVEL SENSOR signal
GGUIDSL	ATTRACTION ROLLER SOLENOID command
HOPMCW	HOPPER MOTOR ROTATIONAL DIRECTION signal
HOPMLK	HOPPER MOTOR LOCK signal
HOPMON	HOPPER MOTOR ON command
HUM	ENVIRONMENT SENSOR HUMIDITY signal
HVATC	ATTRACTION CORONA CURRENT ON/OFF CONTROL signal
HVATI	ATTRACTION CORONA CURRENT LEVEL CONTROL signal
HVCC	POST-CLEANING CORONA ON/OFF CONTROL signal
HVCI	POST-CLEANING CORONA LEVEL CONTROL signal
HVGI	GRID BIAS LEVEL CONTROL signal
HVGIC	GRID BIAS ON/OFF command
HVIDCC	INTERNAL STATIC ELIMINATOR DC ON/OFF CONTROL signal
HVIDCI	INTERNAL STATIC ELIMINATOR DC LEVEL CONTROL signal
HVIOC	EXTERNAL/INTERNAL STATIC ELIMINATOR AC ON/OFF CONTROL signal
HVPR	PRIMARY CURRENT ON/OFF command
HVTRC	TRANSFER CORONA CURRENT ON/OFF CONTROL signal
HVTRI	TRANSFER CORONA CURRENT LEVEL CONTROL signal
INDELD	INSIDE DELIVERY PAPER SENSOR signal
IPFMERR	IP COOLING FAN ERROR signal
IPFMON	IP COOLING FAN ON command
ITOP	IMAGE LEADING EDGE signal
KDEVA	BK-DEVELOPING ASSEMBLY ENGAGING MOTOR BK command
KDEVA*	BK-DEVELOPING ASSEMBLY ENGAGING MOTOR BK command
KDEVB	BK-DEVELOPING ASSEMBLY ENGAGING MOTOR BK command
KDEVB*	BK-DEVELOPING ASSEMBLY ENGAGING MOTOR BK command
KDEVCL	BK-DEVELOPING CYLINDER CLUTCH command
KDEVHL	BK-DEVELOPING ASSEMBLY ENGAGING MOTOR HOLD command
KDEVHP	BK-DEVELOPING ASSEMBLY HOME POSITION SENSOR signal
KEYSW*	KEY SWITCH signal
KTNRSUP*	BK-TONER SUPPLY CLUTCH command
L-ON	LASER ON command
L-RDY	LASER READY command
LCOVD	LEFT COVER OPEN SENSOR signal
LFRCWD	LOWER FIXING ROLLER CLEANING WEB SENSOR signal

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LHON	LOWER FIXING HEATER ON command
LSMCLK	LASER SCANNER MOTOR CLOCK signal
LSMON	LASER SCANNER MOTOR command
LSMRDY	LASER SCANNER MOTOR READY signal
LTHM3	LOWER FIXING ROLLER TEMPERATURE 3 signal
LTHM4	LOWER FIXING ROLLER TEMPERATURE 4 signal
LWEBSL	LOWER CLEANING WEB SOLENOID command
M-REF	M-REFERENCE signal
M-SGNL	M-TONER DENSITY signal
MDEVA	M-DEVELOPING ASSEMBLY ENGAGING MOTOR command
MDEVA*	M-DEVELOPING ASSEMBLY ENGAGING MOTOR command
MDEVB	M-DEVELOPING ASSEMBLY ENGAGING MOTOR command
MDEVB*	M-DEVELOPING ASSEMBLY ENGAGING MOTOR command
MDEVCL	M-DEVELOPING CYLINDER CLUTCH command
MDEVHL	M-DEVELOPING ASSEMBLY ENGAGING MOTOR HOLD command
MDEVHP	M-DEVELOPING ASSEMBLY HOME POSITION SENSOR signal
MFCOVD	MULTIFEEDER OPEN SENSOR signal
MFFDCL	MULTIFEEDER FEED CLUTCH command
MFLFMA	MULTIFEEDER LIFTER MOTOR command A
MFLFMB	MULTIFEEDER LIFTER MOTOR command B
MFLHD	MULTIFEEDER LIFTER-HIGH SENSOR signal
MFLLD	MULTIFEEDER LIFTER-LOW SENSOR signal
MFPAD	MULTIFEEDER PAPER SENSOR signal
MFPUCL	MULTIFEEDER PICK-UP CLUTCH command
MFPUD	MULTIFEEDER PICK-UP SENSOR signal
MFPUSL	MULTIFEED PICK-UP SOLENOID command
MFPWVR	MULTIFEEDER PAPER WIDTH VR signal
MNMON	MAIN MOTOR ON command
MNMRDY	MAIN MOTOR READY signal
MTEP	M-TONER EMPTY signal
MTNRSUP*	M-TONER SUPPLY CLUTCH command
OHPDTC	OHP SENSOR signal
OTDELD*	EXTERNAL DELIVERY PAPER SENSOR signal
OZFMERR	OZONE SUCTION FAN ERROR signal
OZFMON	OZONE SUCTION FAN ON command
PCDTC	PRE-CLEANING PAPER SENSOR signal
PCFDCL	POSTCARD FEEDER CLUTCH command
PCFMERR	PRIMARY CORONA ASSEMBLY FAN ERROR signal
PCFMON	PRIMARY CORONA ASSEMBLY FAN ON command
PCMFMERR	POWER CORD MOUNT FAN ERR signal
PELA1ON	PRE-EXPOSURE LAMP ON command
PH/TX/H200	ORIGINAL TYPE SELECT command
POSTJD	POST-TRANSFER PAPER SENSOR signal
PRDMA	POLISHING ROLLER MOTOR command A
PRDMB	POLISHING ROLLER MOTOR command B
PREJD	PRE-TRANSFER PAPER SENSOR signal
PRERGD	PRE-REGISTRATION SENSOR signal
PRIMFW	PRIMARY CORONA WIRE CLEANING MOTOR NORMAL DRIVE command
PRIMRV	PRIMARY CORONA WIRE CLEANING MOTOR REVERSE DRIVE command
PRM1A	PRE-REGISTRATION MOTOR 1 command

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PRM1A*	PRE-REGISTRATION MOTOR 1 command
PRM1B	PRE-REGISTRATION MOTOR 1 command
PRM1B*	PRE-REGISTRATION MOTOR 1 command
PRM1HL	PRE-REGISTRATION MOTOR 1 HOLD command
PRM2A	PRE-REGISTRATION MOTOR 2 command
PRM2A*	PRE-REGISTRATION MOTOR 2 command
PRM2B	PRE-REGISTRATION MOTOR 2 command
PRM2B*	PRE-REGISTRATION MOTOR 2 command
PRM2HL	PRE-REGISTRATION MOTOR 2 HOLD command
PUFMERR	POWER UNIT COOLING FAN ERROR signal
PUFMON	POWER UNIT COOLING FAN ON command
PUP1SL	PICK-UP ROLLER 1 SOLENOID command
PUP2SL/PUPD1SL	PICK-UP ROLLER 2/1 SOLENOID command
PUP3SL/PUPD2SL	PICK-UP ROLLER 3/2 SOLENOID command
PUVP1AD	PICK-UP VERTICAL PATH-1 SENSOR signal
PUVP2AD	PICK-UP VERTICAL PATH-2 SENSOR signal
PUVP3AD	PICK-UP VERTICAL PATH-3 SENSOR signal
PVE	PAGE VERTICAL SYNCHRONOUS command
RCOVD	RIGHT COVER OPEN SENSOR signal
REFMERR	REAR INTAKE FAN ERROR signal
REFMON	REAR INTAKE FAN ON command
REGCL*	REGISTRATION CLUTCH command
REGDTC	REGISTRATION SENSOR signal
REPUCL*	DUPLEXING UNIT PICK-UP CLUTCH command
RGRLSL	REGISTRATION ROLLER RELEASING SOLENOID command
RPUVPD	DUPLEXING UNIT PICK-UP VERTICAL PATH SENSOR signal
SCDSL	SEPARATION CLAW SOLENOID command
SCFMERR	LASER SCANNER MOTOR COOLING FAN ERROR signal
SCFMON	LASER SCANNER MOTOR COOLING FAN ON command
SCHP	SCANNER HOME POSITION signal
SHUTOFF*	SHUT OFF signal
SJAMD	SEPARATION SENSOR signal
SL1FMERR	SCANNING LAMP COOLING FAN 1 ERROR signal
SL1FMON	SCANNING LAMP COOLING FAN 1 ON command
SL2FMERR	SCANNING LAMP COOLING FAN 2 ERROR signal
SL2FMON	SCANNING LAMP COOLING FAN 2 ON command
SL3FMERR	SCANNING LAMP COOLING FAN 3 ERROR signal
SL3FMON	SCANNING LAMP COOLING FAN 3 ON command
SPACC	SEPARATION CORONA AC ON/OFF CONTROL signal
SPACI	SEPARATION CORONA AC VOLTAGE LEVEL CONTROL signal
SPDCC	SEPARATION CORONA DC ON/OFF CONTROL signal
SPDCI	SEPARATION CORONA DC CURRENT LEVEL CONTROL signal
SSPUPSL	SEPARATION PUSH-UP SOLENOID command
STCLOSE*	STOP PLATE SOLENOID CLOSE command
STOPEN*	STOP PLATE SOLENOID OPEN command
TEMP	ENVIRONMENT SENSOR TEMPERATURE signal
TNFMERR	TONER SUCTION FAN ERROR signal
TNFMON	TONER SUCTION FAN ON command
TRCMLK	TRANSFER DRUM CLEANER BRUSH MOTOR LOCK signal
TRCMON	TRANSFER DRUM CLEANER BRUSH MOTOR ON command
TRDCMA	TRANSFER DRUM CLEANER MOTOR command
TRDCMA*	TRANSFER DRUM CLEANER MOTOR command
TRDCMB	TRANSFER DRUM CLEANER MOTOR command

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TRDCMB*	TRANSFER DRUM CLEANER MOTOR command
TRDCMHL	TRANSFER DRUM CLEANER MOTOR HOLD command
TRDCPHP	TRANSFER DRUM CLEANER HOME POSITION SENSOR signal
TRDMA	TRANSFER DRUM MOTOR command
TRDMA*	TRANSFER DRUM MOTOR command
TRDMB	TRANSFER DRUM MOTOR command
TRDMB*	TRANSFER DRUM MOTOR command
TRDMHL	TRANSFER DRUM MOTOR HOLD command
TRDPHP	TRANSFER DRUM HOME POSITION SENSOR signal
UFRCWD	UPPER FIXING ROLLER CLEANING WEB SENSOR signal
UHON	UPPER FIXING HEATER ON command
UTHM1	UPPER FIXING ROLLER TEMPERATURE 1 signal
UTHM2	UPPER FIXING ROLLER TEMPERATURE 2 signal
UWEBSL	UPPER CLEANING WEB SOLENOID command
VCLK	VIDEO CLOCK PULSE command
VD0-VD7	VIDEO0-7 command
WTNRBD	WASTE TONER FEEDING SCREW LOCK DETECTING SWITCH signal
WTONER	WASTE TONER FULL SENSOR signal
Y-REF	Y-REFERENCE signal
Y-SGNL	Y-TONER DENSITY signal
YDEVA	Y-DEVELOPING ASSEMBLY ENGAGING MOTOR command
YDEVA*	Y-DEVELOPING ASSEMBLY ENGAGING MOTOR command
YDEVB	Y-DEVELOPING ASSEMBLY ENGAGING MOTOR command
YDEVB*	Y-DEVELOPING ASSEMBLY ENGAGING MOTOR command
YDEVCL	Y-DEVELOPING CYLINDER CLUTCH command
YDEVHL	Y-DEVELOPING ASSEMBLY ENGAGING MOTOR HOLD command
YDEVHP	Y-DEVELOPING ASSEMBLY HOME POSITION SENSOR signal
YTEP	Y-TONER EMPTY signal
YTNRSUP*	Y-TONER SUPPLY CLUTCH command

2. Abbreviations

AINTR	ADDITIONAL INITIAL ROTATION
CNTR	CONTROL ROTATION
COPY	COPY
DSRDY	SCANNER READY
INTR	INITIAL ROTATION
LSTR	LAST ROTATION
STBY	STANDBY
WMPU	WARM UP

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Power supply assembly

230V ONLY

230V

100V

Power cord

Deck heater

Leakage breaker

Noise filter

Environment switch

SSR 1

SSR 2

AC fuse PCB

Cassette heater switch

Cassette heater 1

Cassette heater 2

Drum heater controller PCB

Drum heater

Flicker controller PCB

AC power cut relay

Oil pump driver PCB

Oil pump

Fixing upper thermal switch

Fixing upper heater

Fixing lower thermal switch

Fixing lower heater

Lamp regulator

Optical thermal switch 1

Optical thermal switch 2

Scanning lamp

Power switch

DC power supply PCB

DC power cut relay

DC fuse PCB

Left front door switch

CLC1150 Delivery door switch

CLC1120 1130 Transfer unit lever switch

Transfer locking driver PCB

Registration path driver PCB

Transfer driver PCB

DC driver PCB

CPU PCB

HVT-DC PCB

HVT-AC PCB

Drum motor drive PCB

Developing bias PCB

Hopper motor PCB

Transfer locking driver PCB

Main motor driver PCB

Duplexing motor drive PCB

Duplexing driver PCB

Fixing motor driver PCB

Laser controller PCB

Analog processor PCB

Pickup driver PCB

Laser scanner motor PCB

Image processor mother PCB

Inverter PCB

For external device

(R-3)

(R-4)

CCX

CCX main PCB

Control Card V

ECO PCB

Original scanner motor driver PCB

Original scanner motor

Original scanner HP sensor

Original exposure system cooling fan 1

RDF socket

Projector socket

Editor socket

Exhaust fan

IP cooling fan

Laser scanner motor cooling fan

Power supply cooling fan

Back suction fan

Primary charging assembly fan

Original exposure system cooling fan 2

Original exposure system cooling fan 3

Electrical unit cooling fan

Ozone suction fan

CCD/CCD driver PCB

Analog processor PCB

Memory PCB

Control panel PCB

Keypad PCB

Pilot lamp

Contrast VR PCB

Inverter PCB

LCD/touch panel

DC driver PCB

Bi-Centronics I/F PCB

Flash memory download

Image processor mother PCB

Image processor main PCB

Image processor PRJ PCB (accessory)

Image processor ED/IF PCB (accessory)

ECO relay PCB

Image processor ECO PCB

External device socket

BD PCB

Laser controller PCB

Laser driver PCB 1

Laser driver PCB 2

Laser heater PCB

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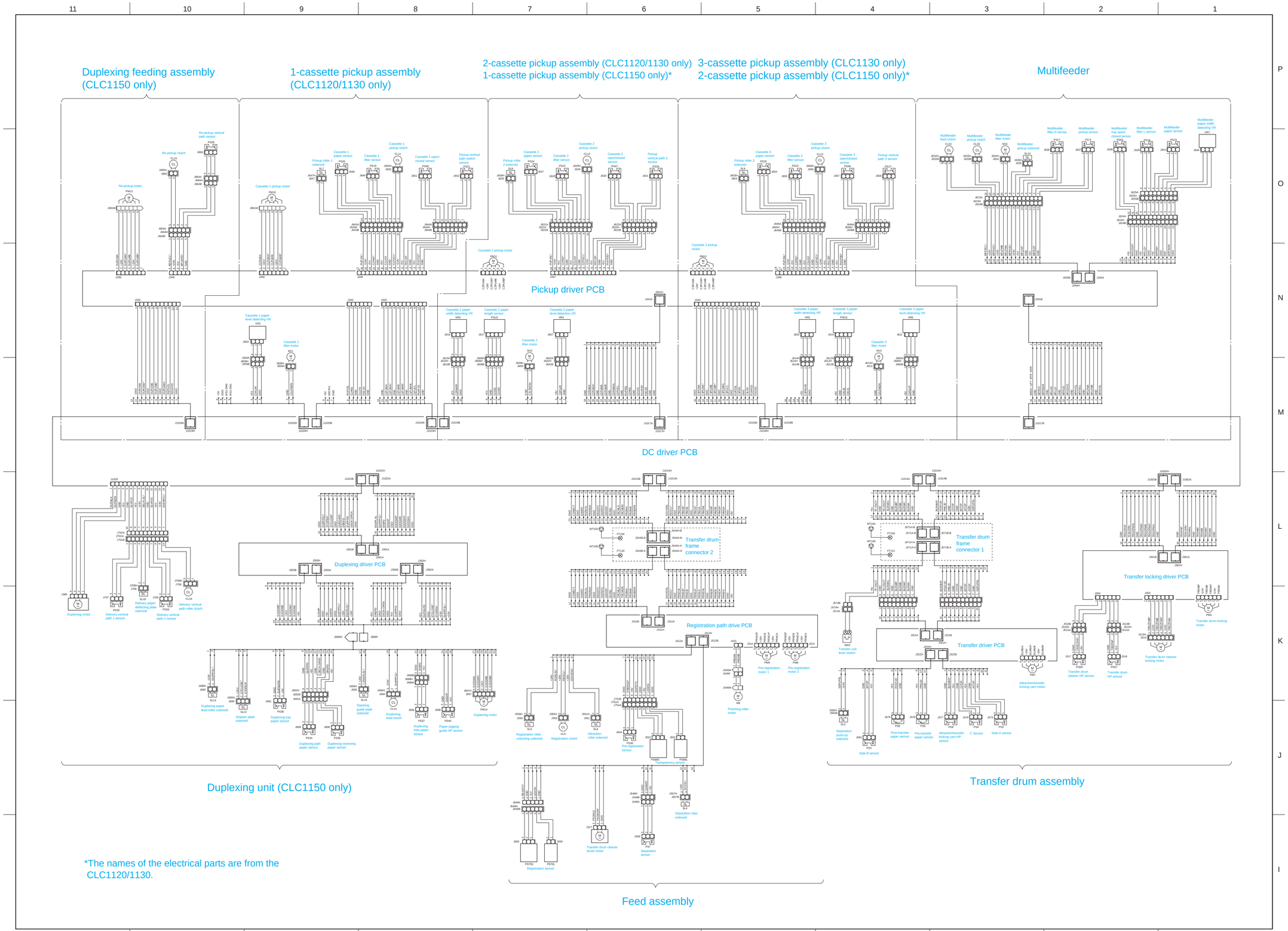
General Circuit Diagram (2/3)


Duplexing feeding assembly (CLC1150 only)
1-cassette pickup assembly (CLC1120/1130 only)
2-cassette pickup assembly (CLC1120/1130 only)
1-cassette pickup assembly (CLC1150 only)*
3-cassette pickup assembly (CLC1130 only)
2-cassette pickup assembly (CLC1150 only)*
Multifeeder
Pickup driver PCB
DC driver PCB
Duplexing driver PCB
Transfer drum frame connector 2
Transfer drum frame connector 1
Registration path drive PCB
Transfer driver PCB
Transfer locking driver PCB
Duplexing unit (CLC1150 only)
Transfer drum assembly
Feed assembly
*The names of the electrical parts are from the CLC1120/1130.

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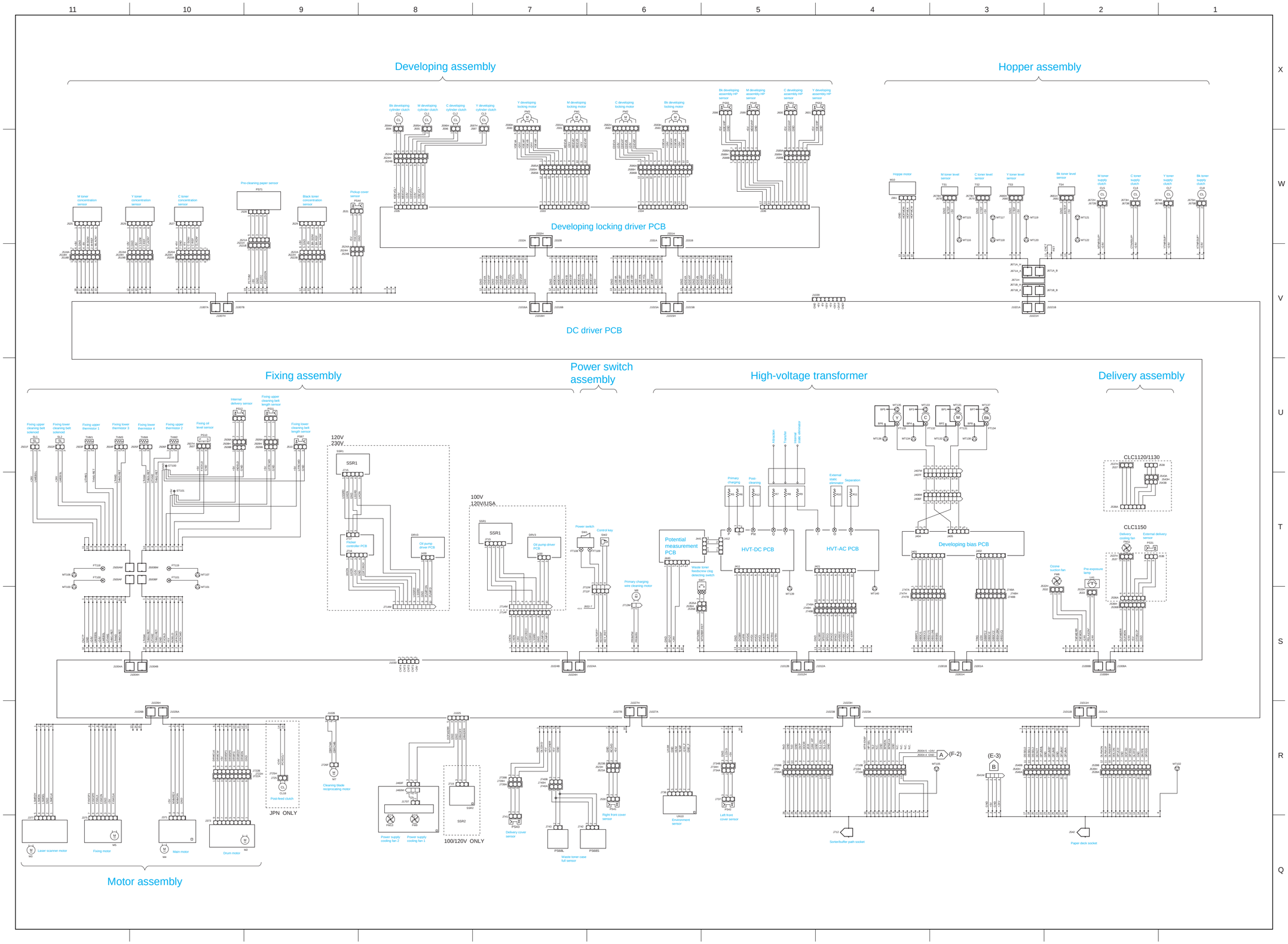
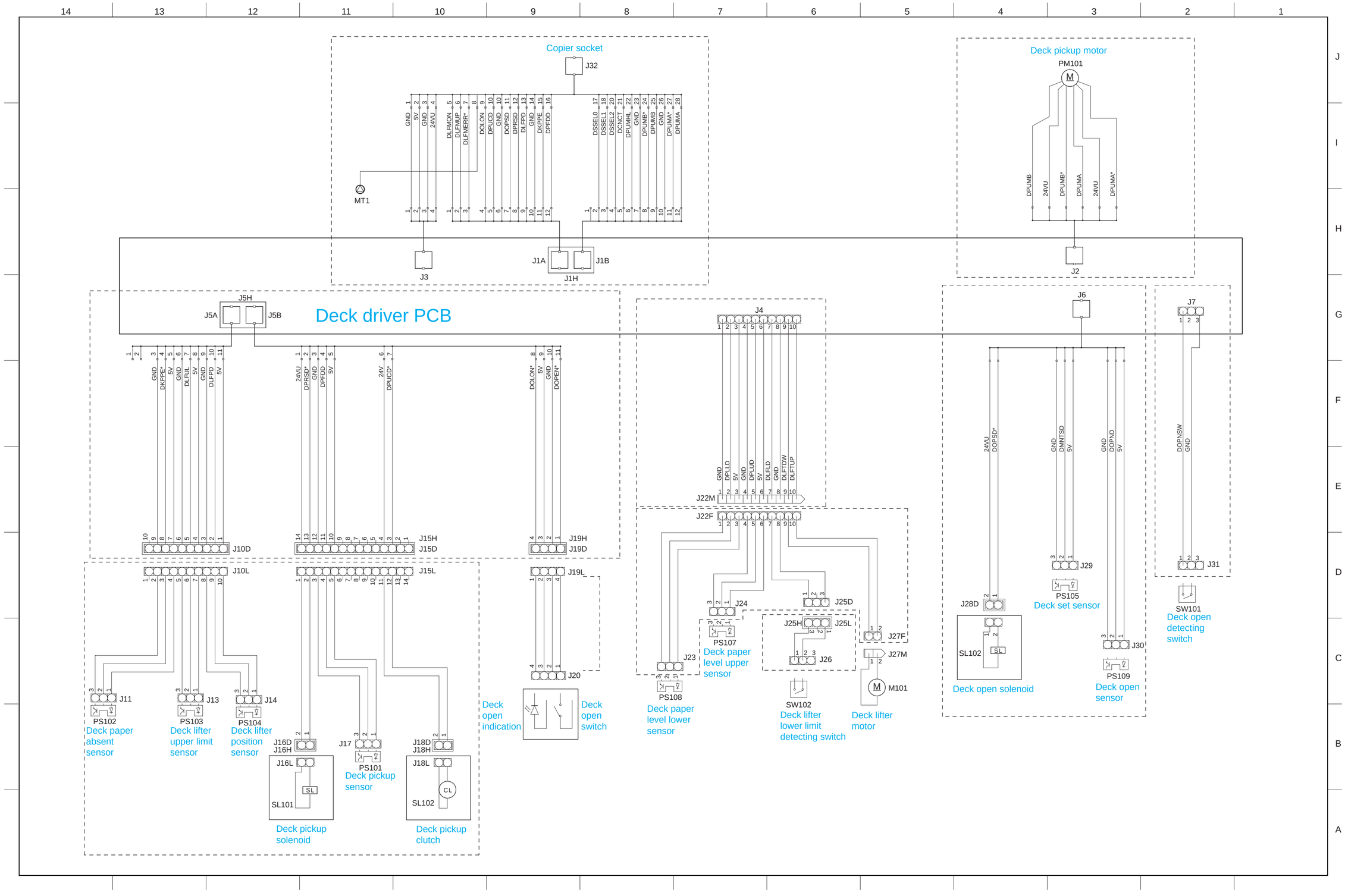
General Circuit Diagram (3/3)



D. PAPER DECK GENERAL CIRCUIT DIAGRAM



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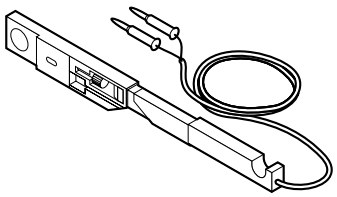
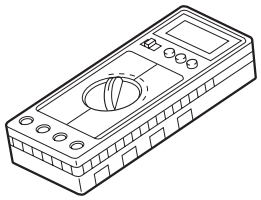
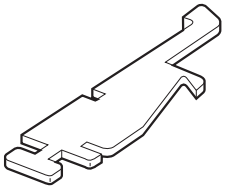
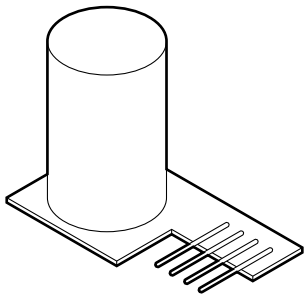
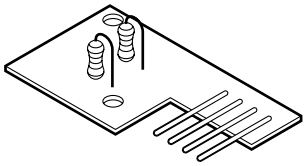
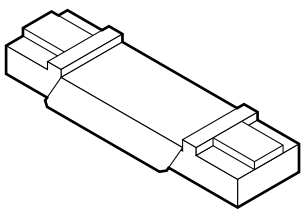
E. SPECIAL TOOLS

You will need the following special tools to service the copier in addition to the standard tools set:

No.	Tool name	Tool number	Shape	Rank	Remarks
1	Laser power checker	FY9-4013		A	Use it in combination with a digital multimeter when adjusting the intensity of laser from the laser unit.
2	Digital multimeter	CK-0436		A	Use it when making electrical checks; use it in combination with a laser power checker when adjusting the intensity of light from the laser unit.
3	Door switch tool	TKN-0093		A	Do not remove the transfer frame while the door switch actuator is fitted.
4	Environment sensor checker	TKN-0456		B	Use it when checking the environment sensor.
5	Environment measurement PCB checker	TKN-0457		B	Use it when checking the environment measurement PCB.
6	Potential sensor checker	TKN-0197		B	Use it when making zero-level checks on the surface postnatal sensor.

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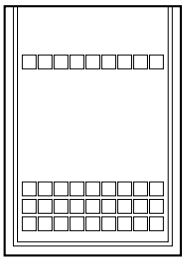
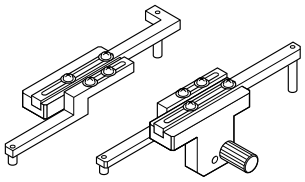
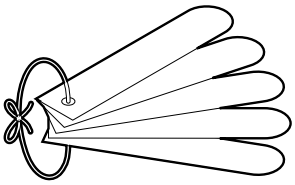
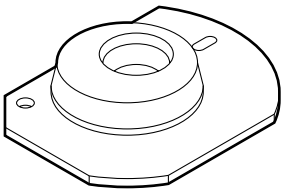
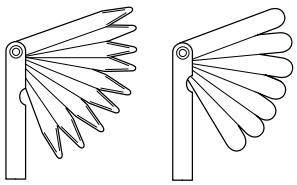
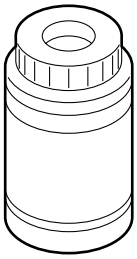
No.	Tool name	Tool number	Shape	Rank	Remarks
7	CA1 test sheet	FY9-9030-000		A	Use it when adjusting or checking images.
8	Mirror positioning tool (front, rear)	FY9-3040-000		B	Use it when adjusting the distance between No. 1 and No. 2 mirrors; use it in combination with a mirror positioning tool.
9	S-B gap gauge	FY9-3044		B	Use it to adjust the S-B gap of the developing assembly.
10	Drum shaft positioning tool	FY9-3045		B	Use it to adjust the potion of the photosensitive drum shaft.
11	Gap gauge	CK-0057-000 or CK-0061-000		B	Use it when adjusting the position of the transfer separation claws.
12	Drum cleaner lubricant	TKN-0480		B	Use it when cleaning the cleaning blade.

Note:

A: Each service person is expected to carry one.
B: Each group of about five service persons is expected to carry one.
C: Each workshop is expected to keep one.

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F. SOLVENTS AND OILS

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning: e.g., glass, plastic, rubber; external covers.	Fluorine family hydrocarbon Alcohol Surface activating agent Water	· Do not bring near fire. · Procure locally. · Isopropyl alcohol may be used.
2	Solvent	Cleaning: e.g., metal; soiling by oil or toner.	Fluorine family hydrocarbon Alcohol Chorine family hydrocarbon	· Do not bring near fire. · Procure locally.
3	Heat-resisting grease	Lubricating: e.g., fixing assembly drive part.	Mineral oil family lithium soap Molybdenum disulfide	· CK-0427 (500 g/ can)
4	Lubricant	Lubricating: e.g., scanner rail.	Silicone oil	· FY9-6011 (10 g)
5	Lubricant	Lubricating: e.g., drive part.	Silicone oil	· CK-0551 (20 g)
6	Lubricant oil	Lubricating: e.g., photosensitive drum cleaning blade.	Fluorine graphite	· TKN-0480
7	Lubricant	Lubricating: e.g., spring clutch.	Synthetic oil	· FY9-6006 (7 g/ bottle)

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Prepared by
Office Imaging Products Technical Support Division
Office Imaging Products Quality Assurance Center
CANON INC.
Printed in Japan

REVISION 0 (MAR. 1999) (18723/35338/71720)

5-7, Hakusan 7-chome, Toride, Ibaraki, 302-8501 Japan

Canon

This publication is printed on
70% reprocessed paper.

PRINTED IN JAPAN (IMPRIME AU JAPON) 0499S1.5-1